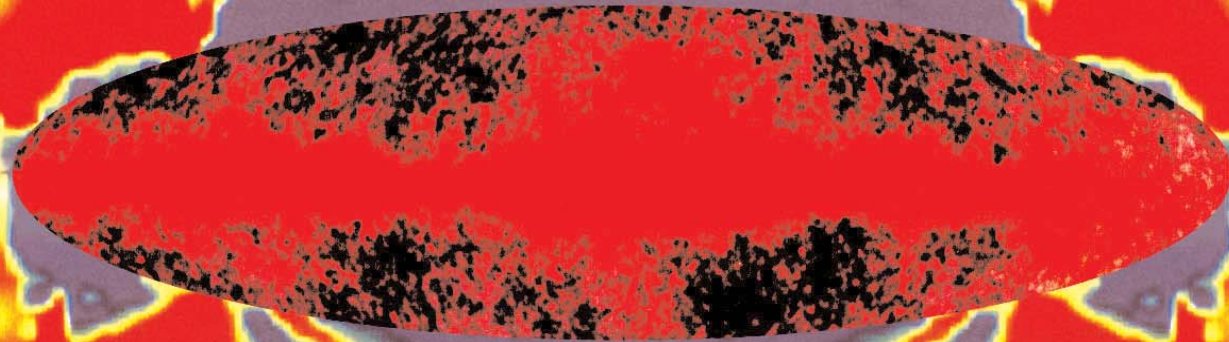


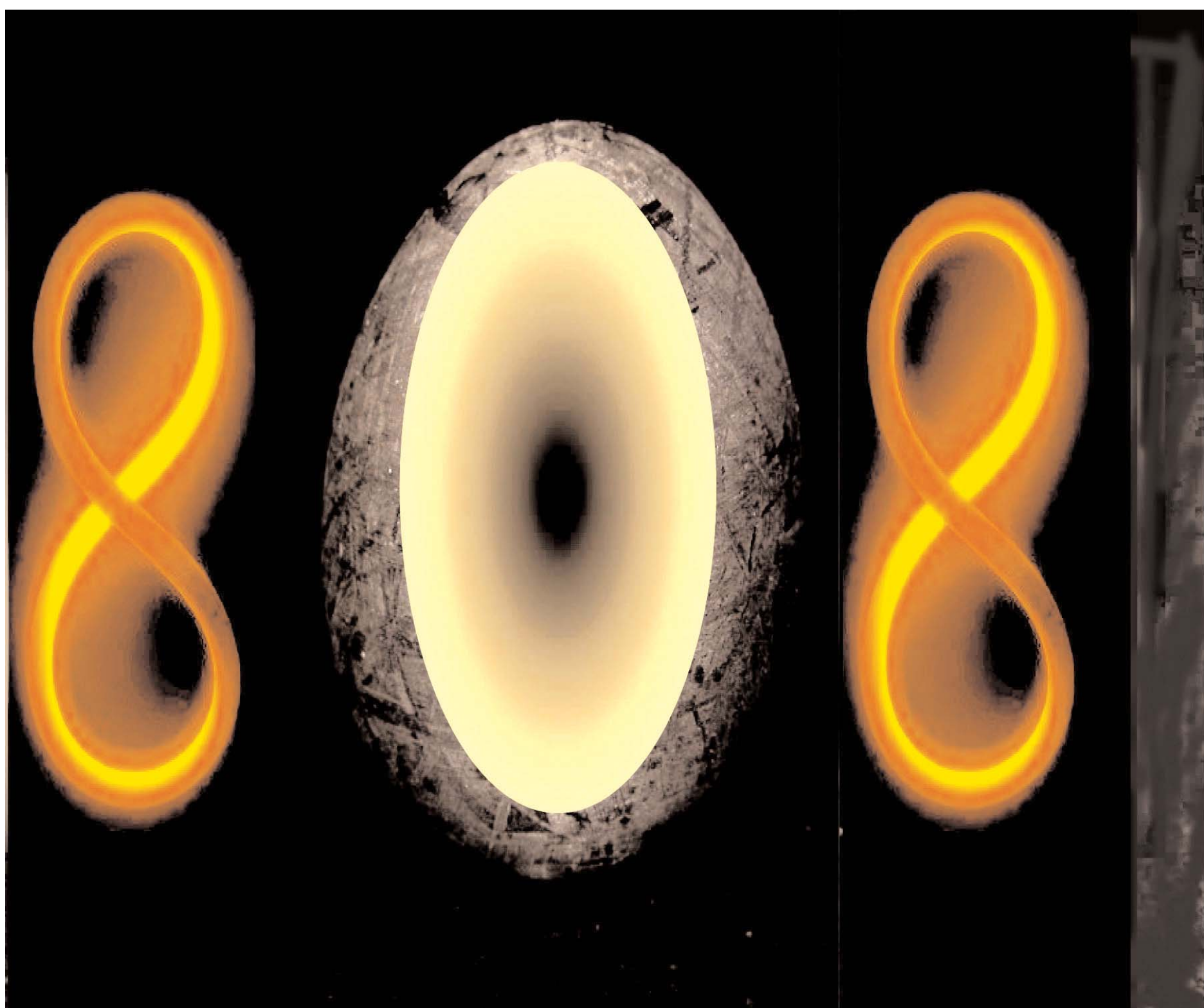
POETIC QUANTUM

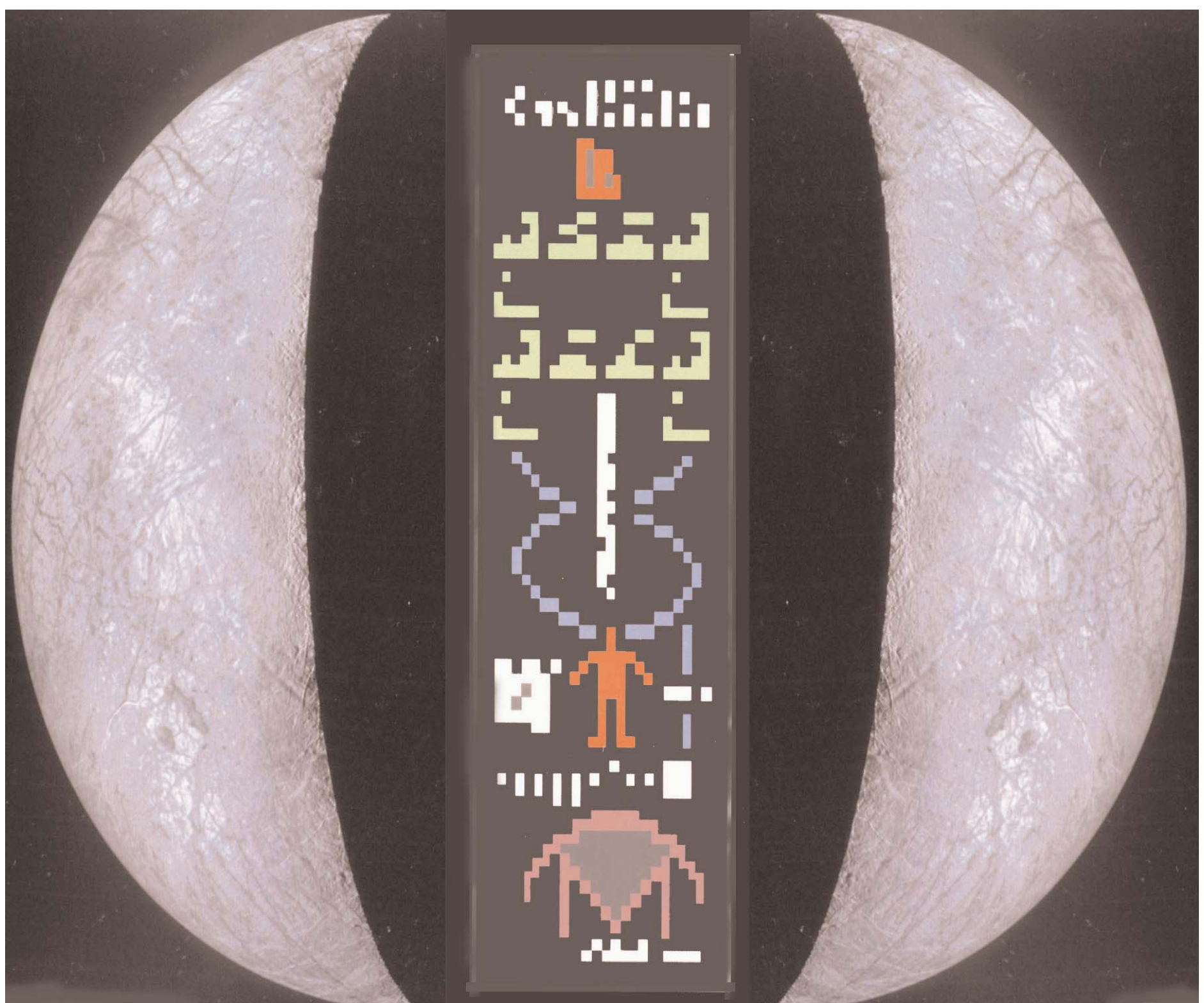
POÉSIE QUANTIQUE

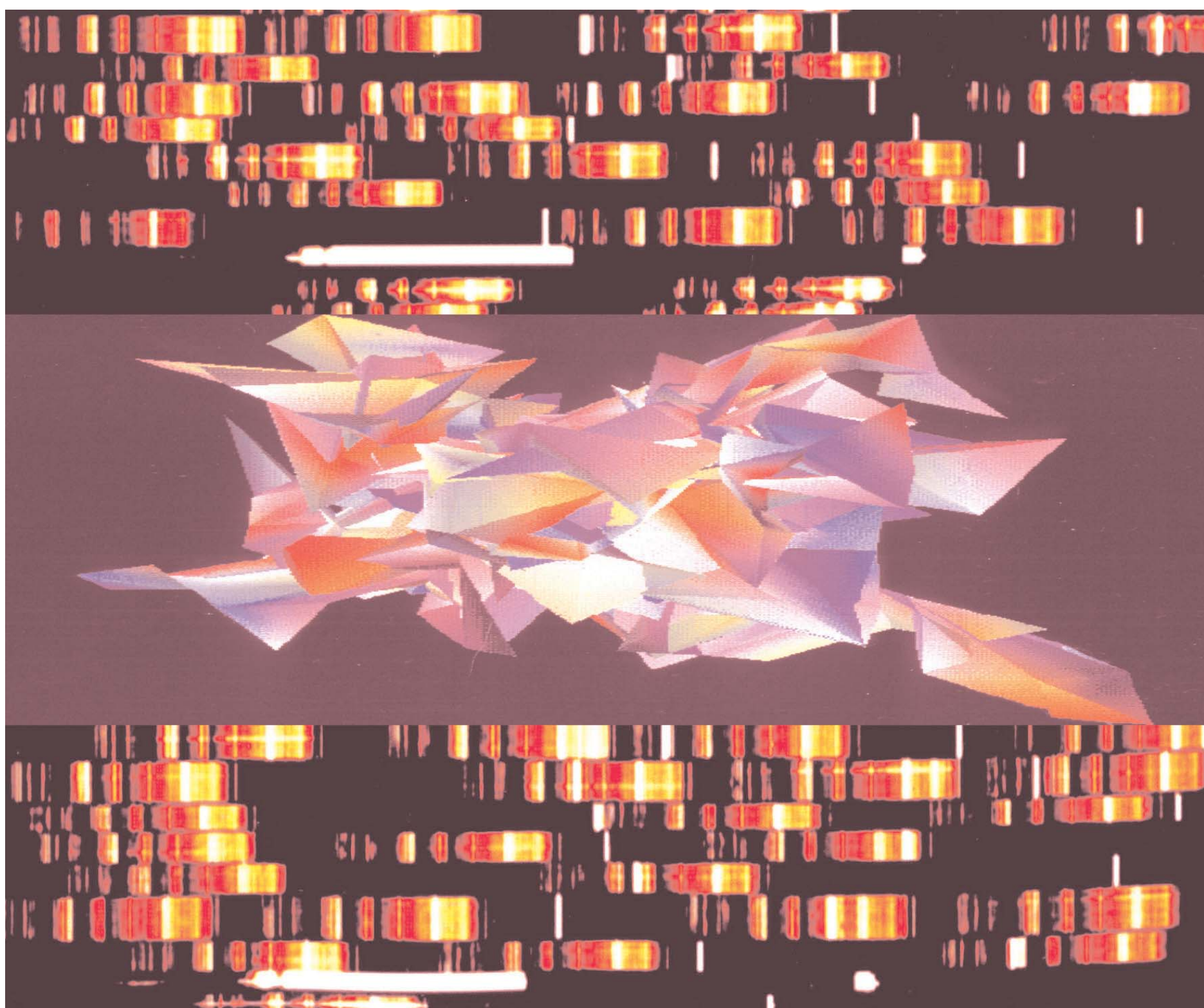
02

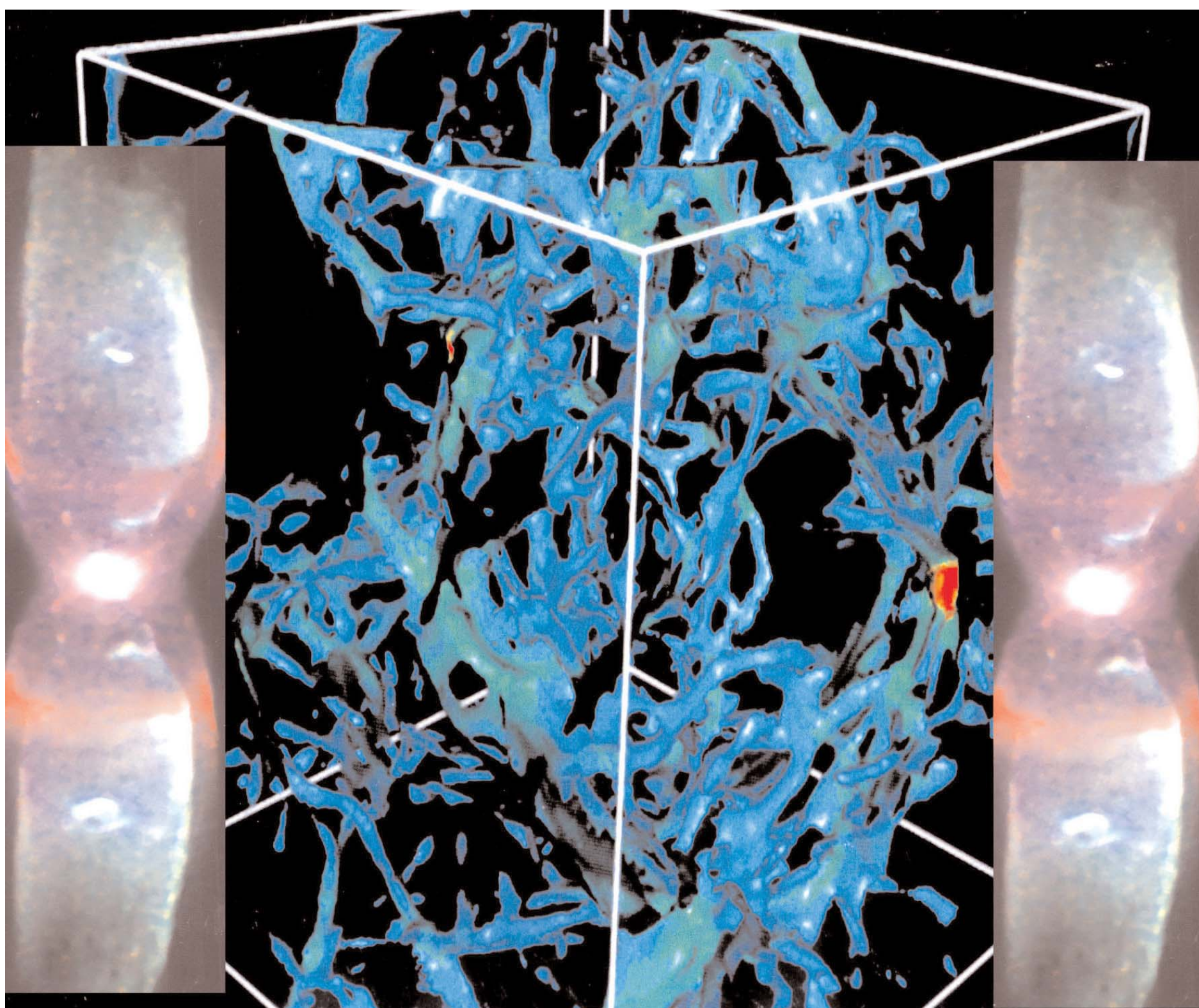


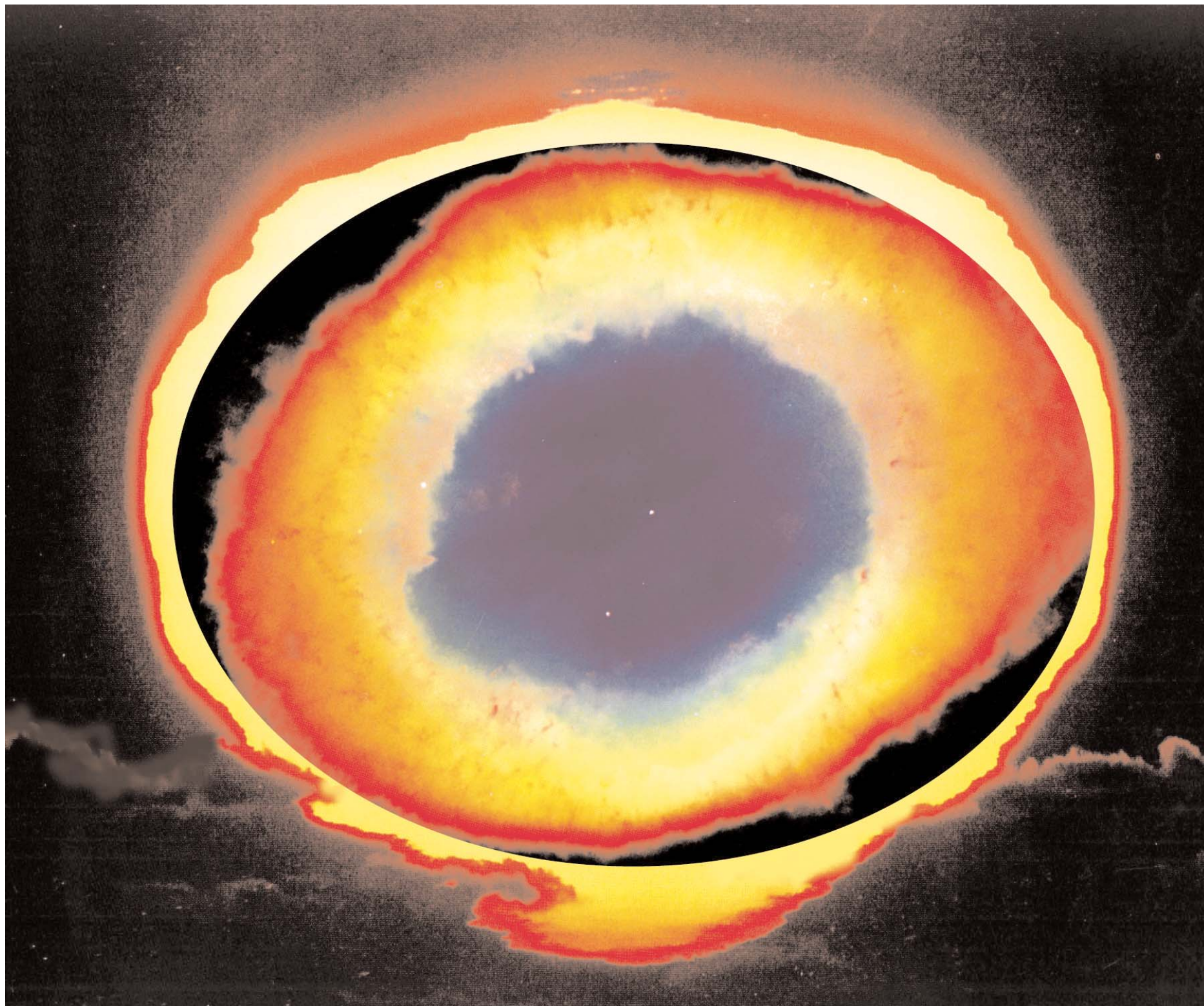
CLAUDE PAQUET



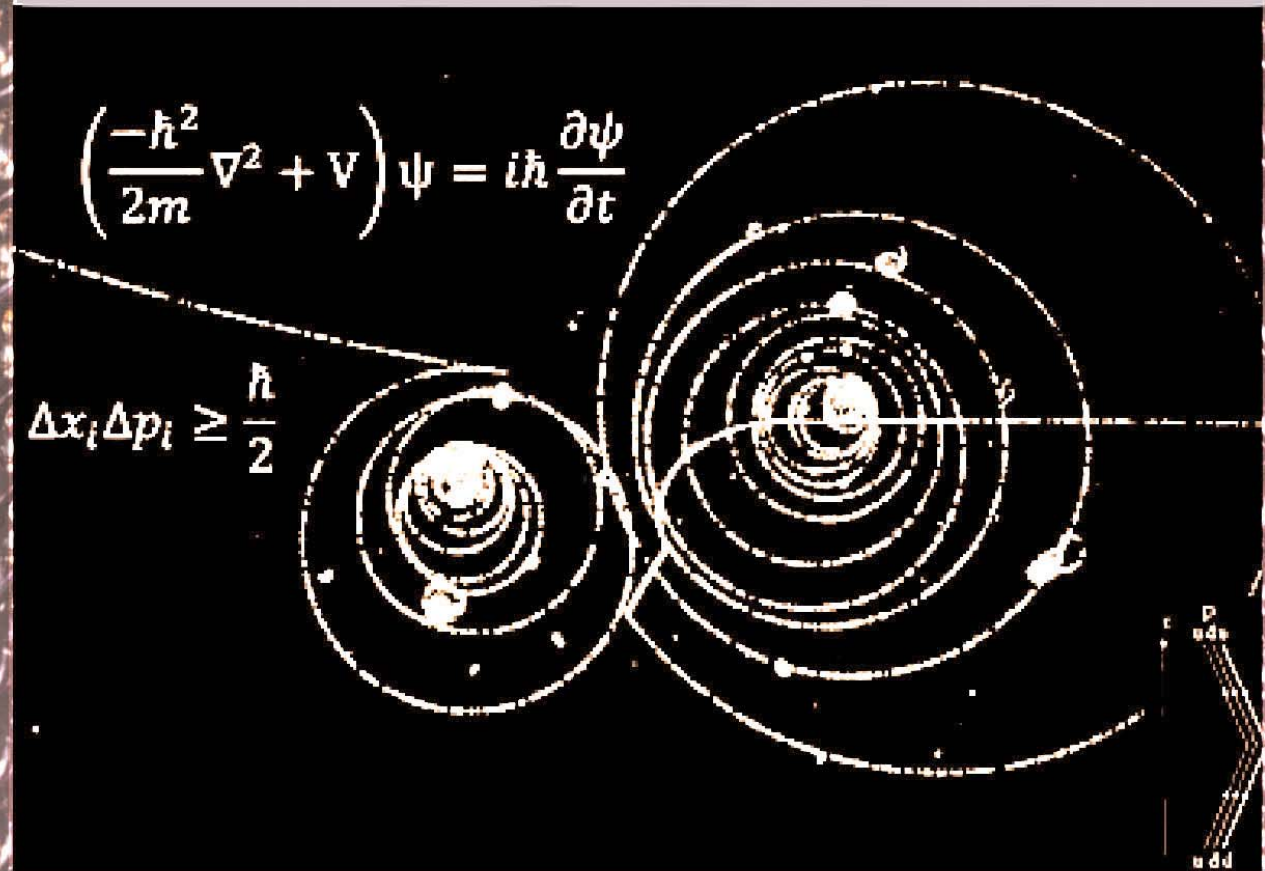




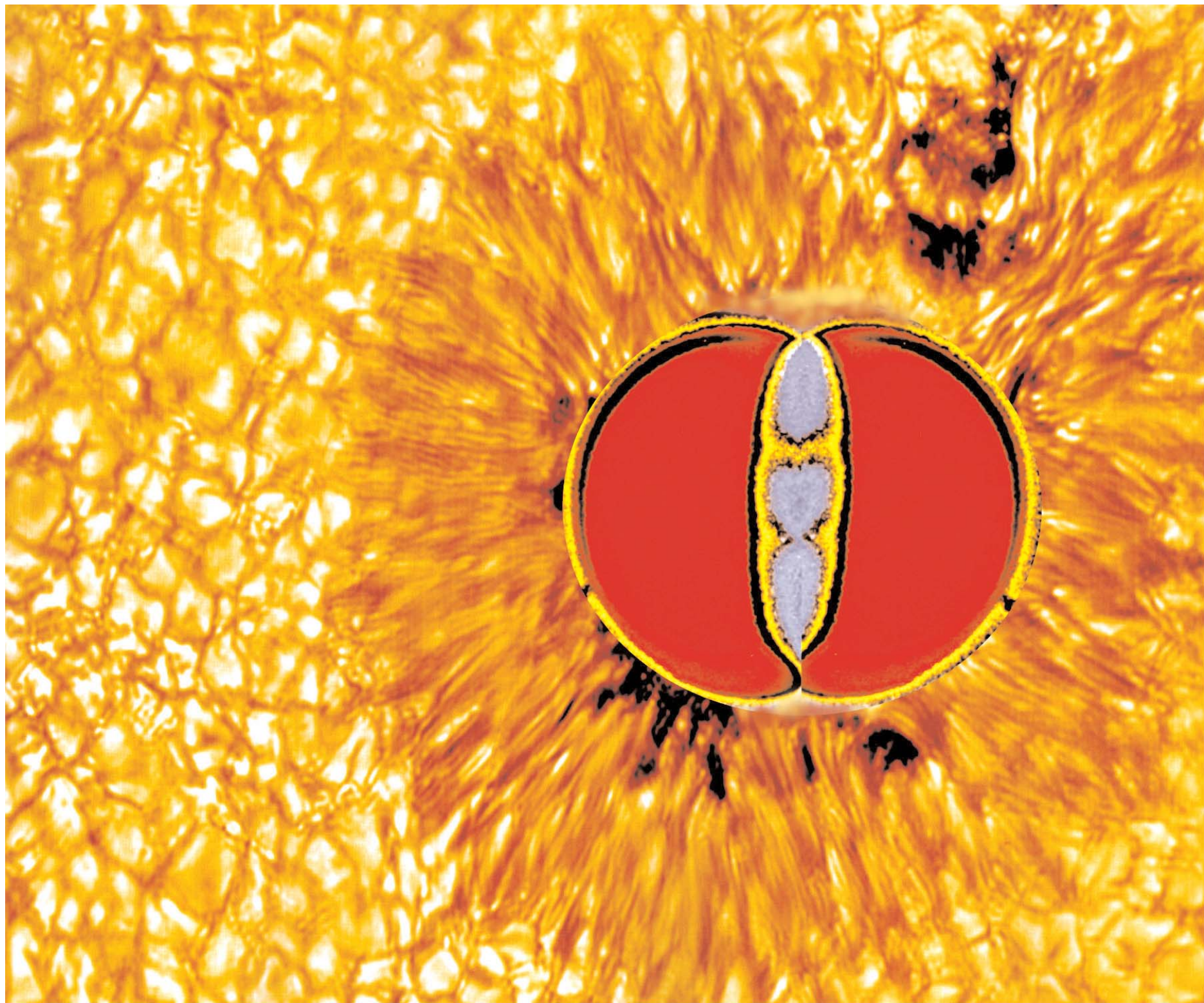


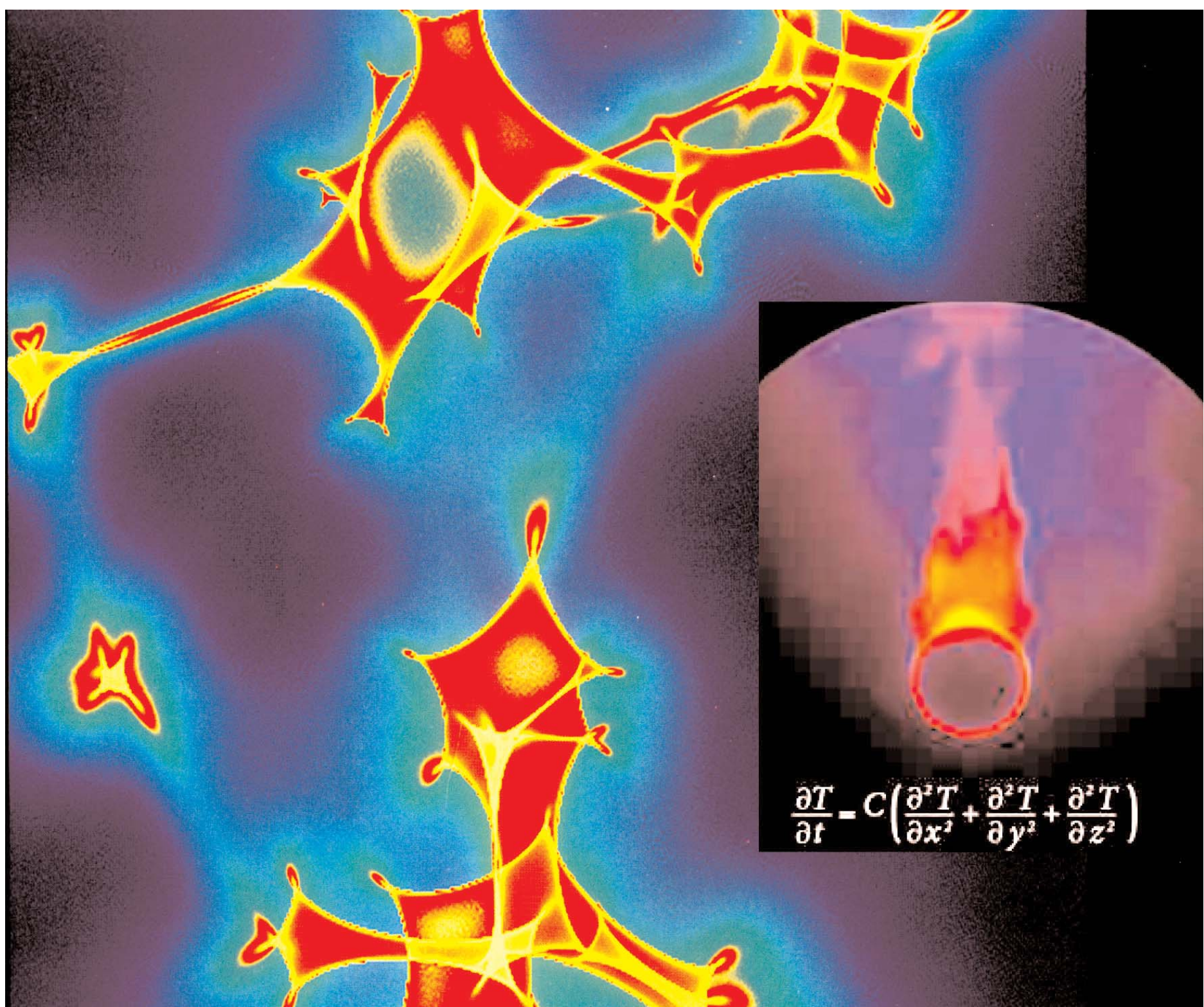


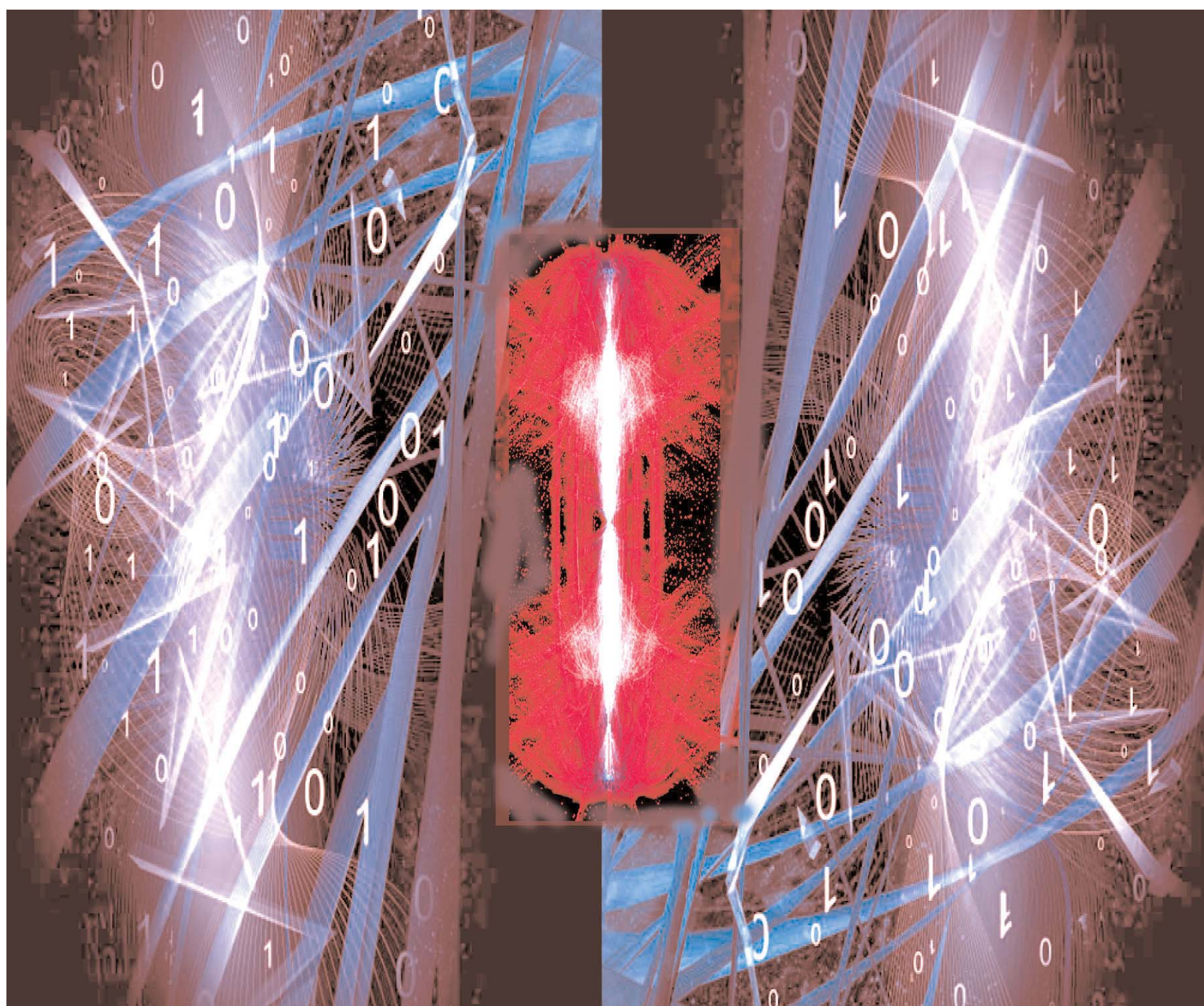
$$-\frac{\hbar^2}{2m} \nabla^2 \psi(\mathbf{r}) + V(\mathbf{r})\psi(\mathbf{r}) = E \psi(\mathbf{r})$$

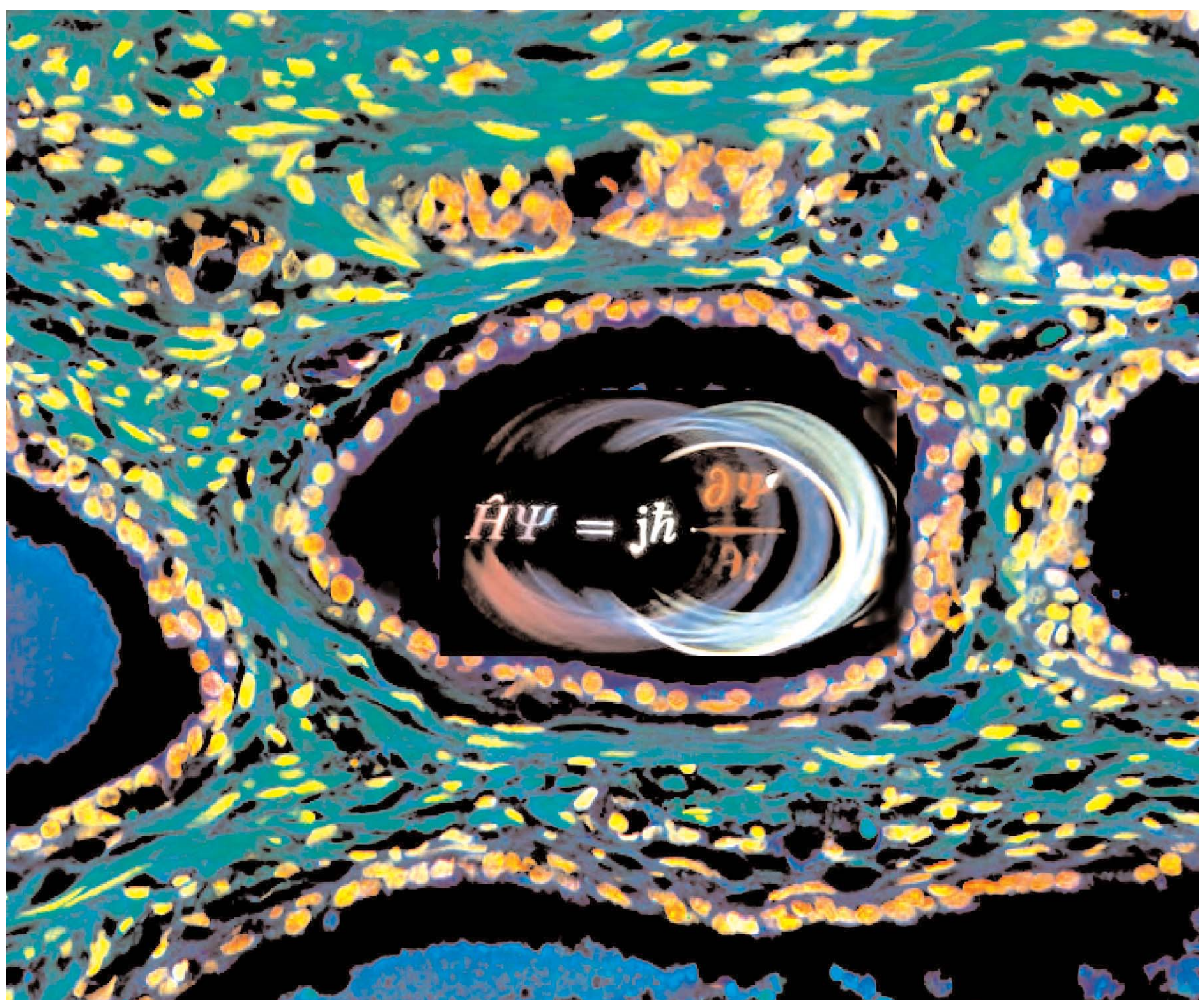


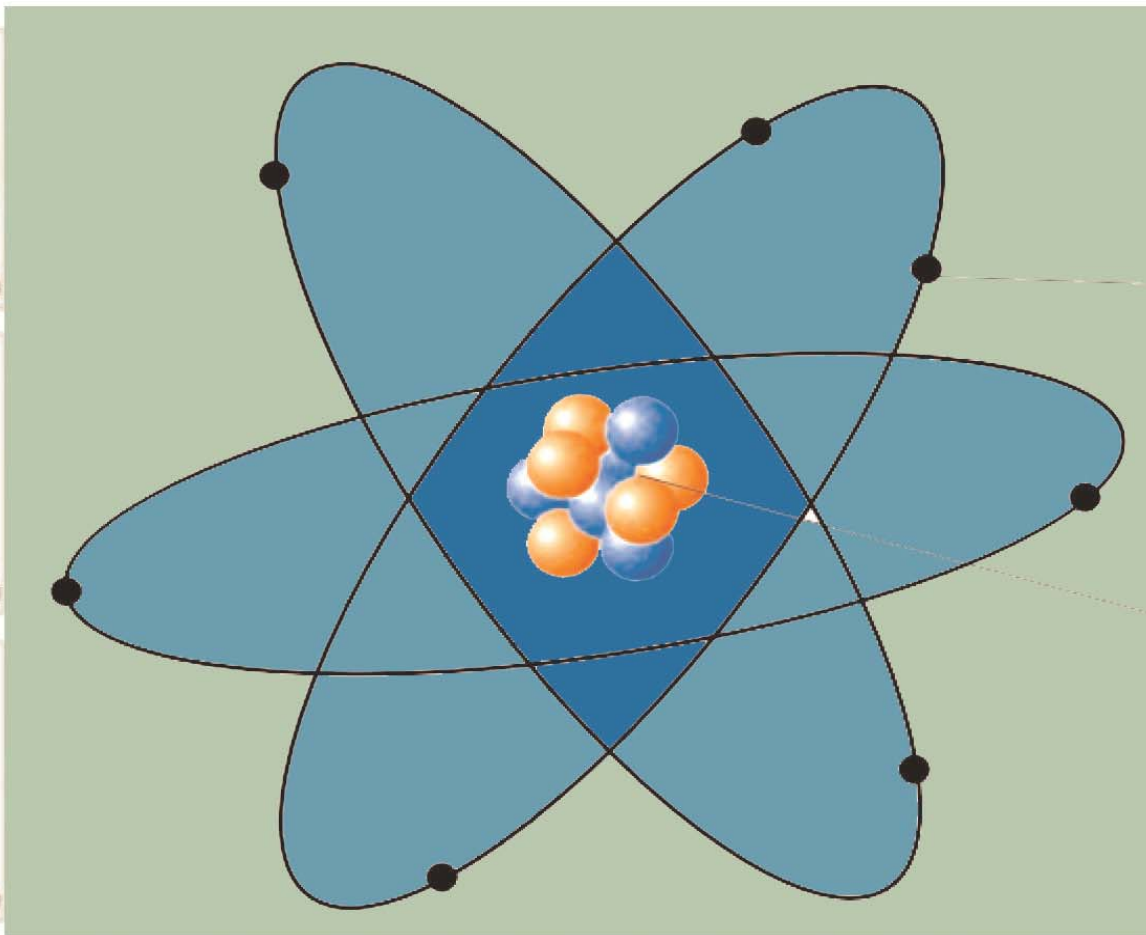
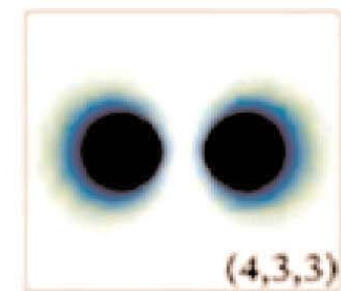
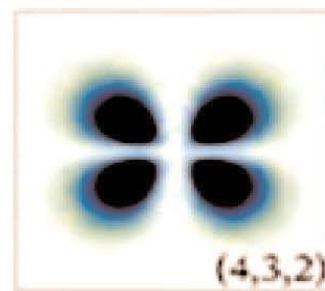
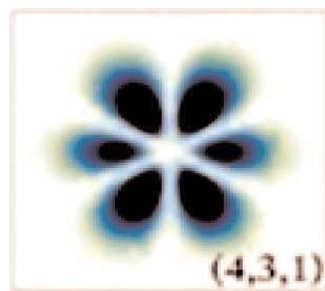
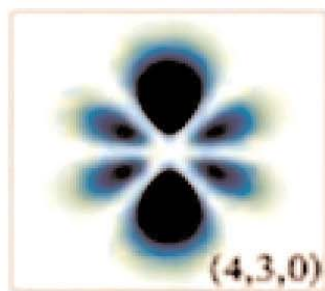
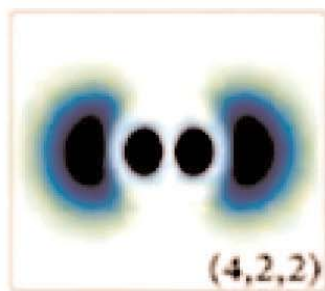
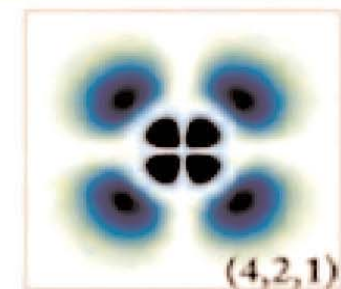
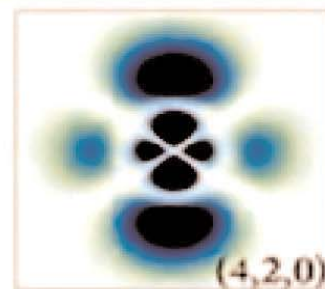
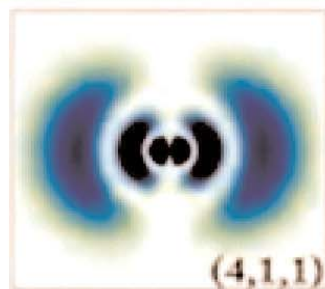
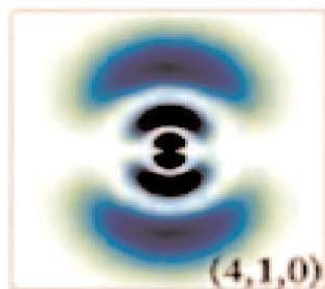
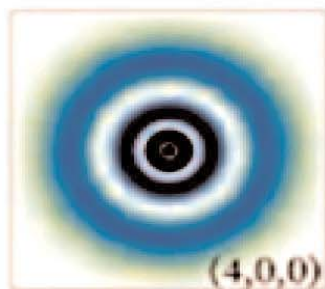
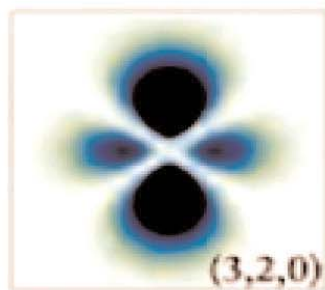
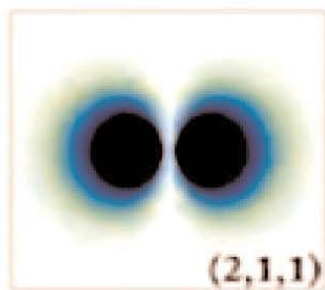
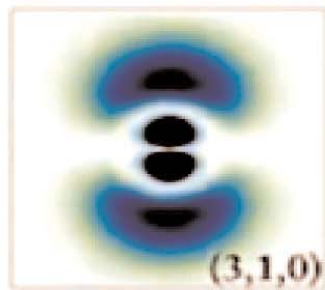
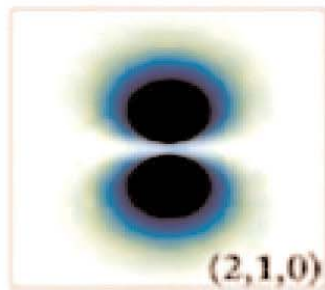
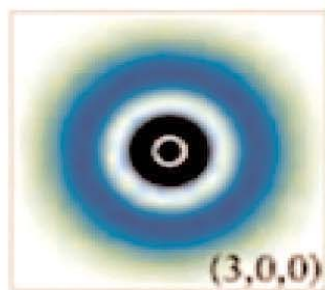
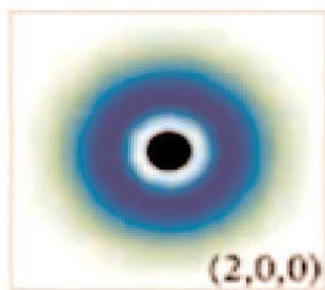
$$\left(3mc^2 + \sum_{k=1}^3 \alpha_k p_k c \right) \psi(\mathbf{x}, t) = i\hbar \frac{\partial \psi(\mathbf{x}, t)}{\partial t}$$

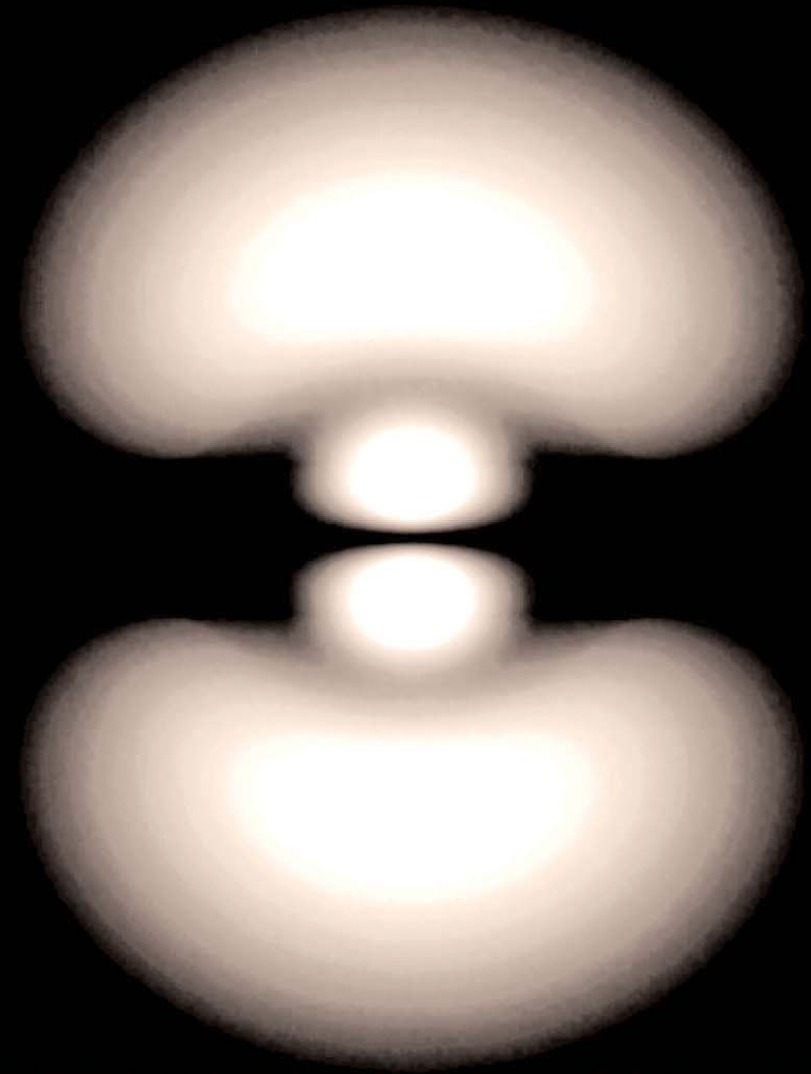




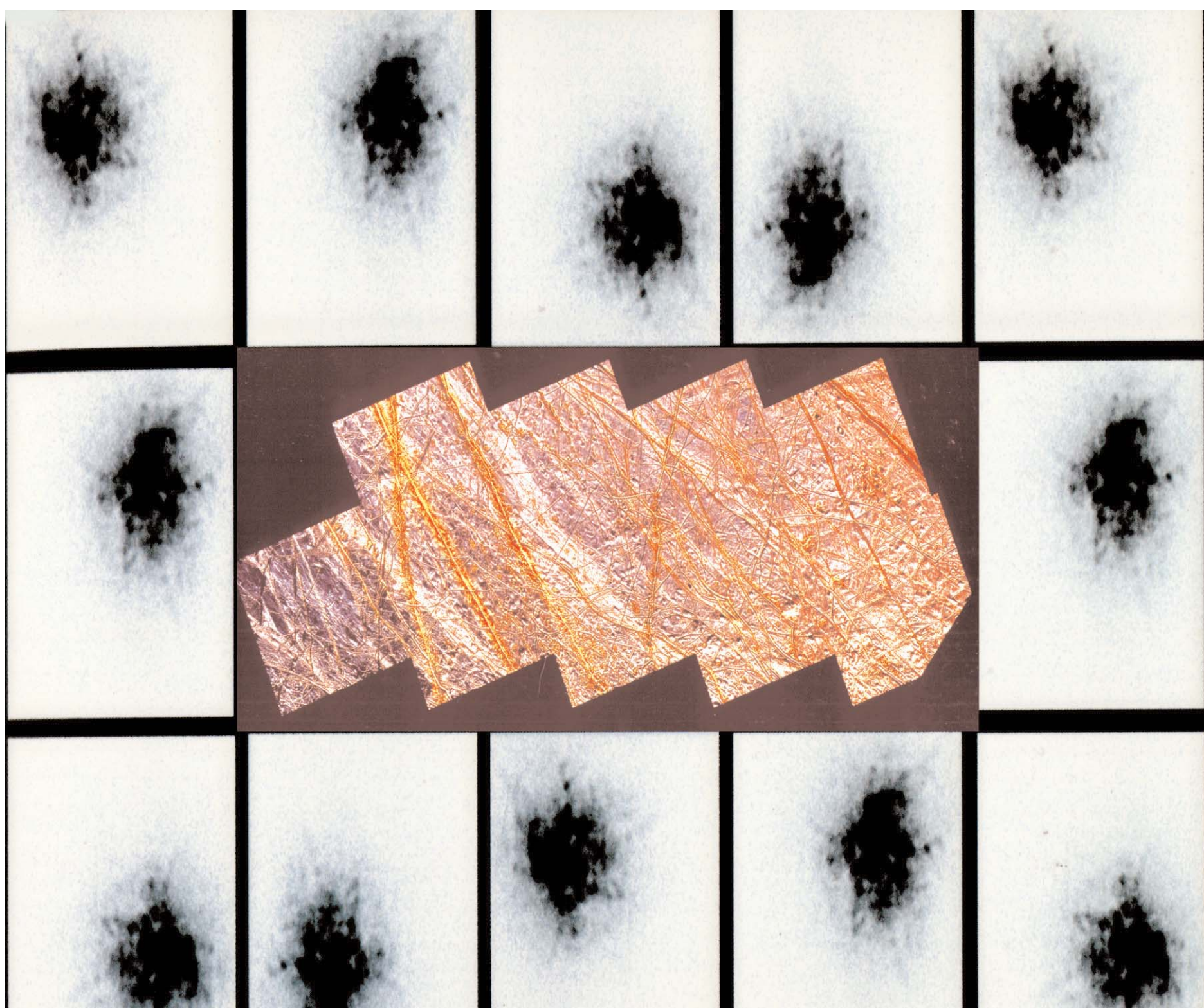


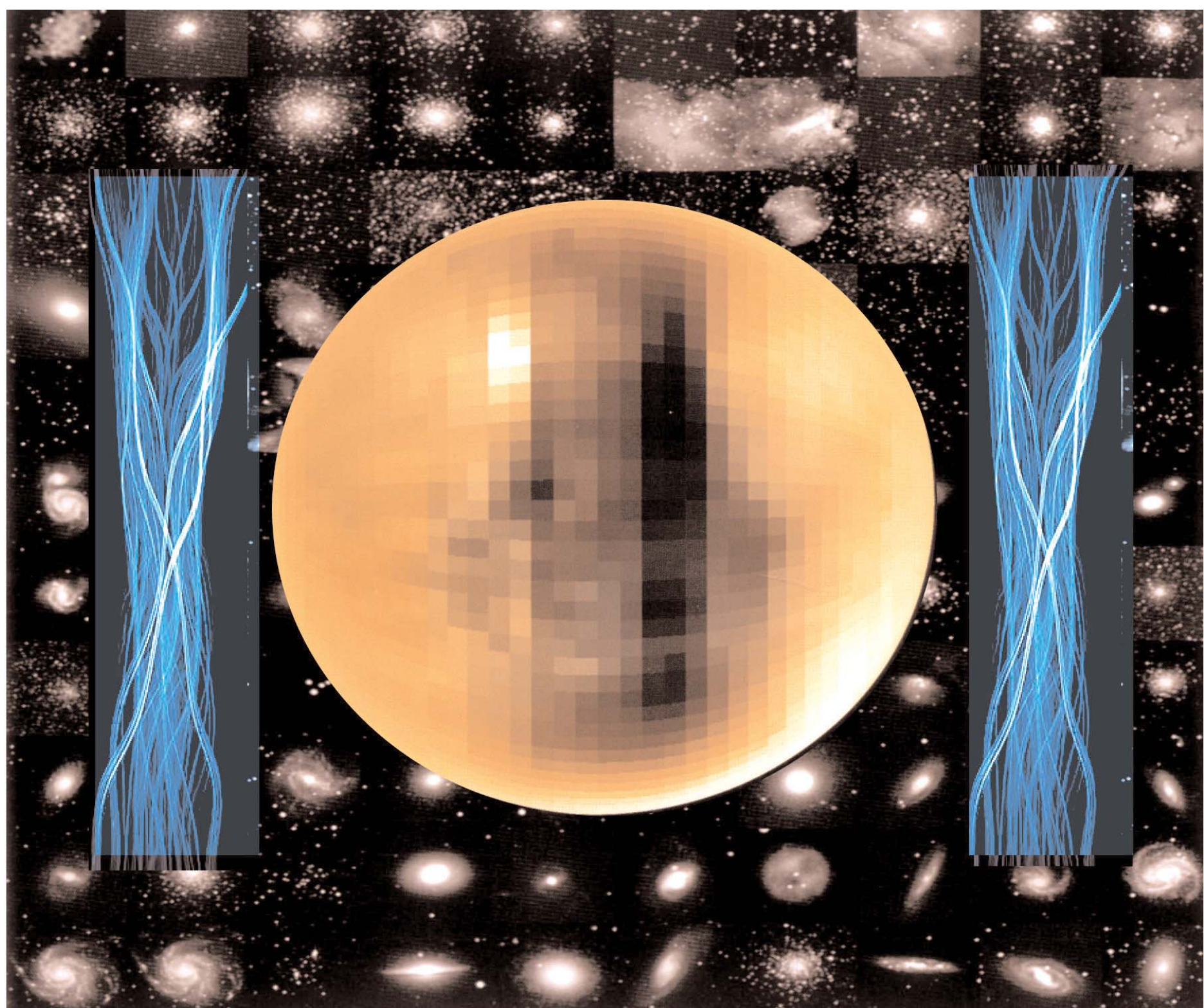


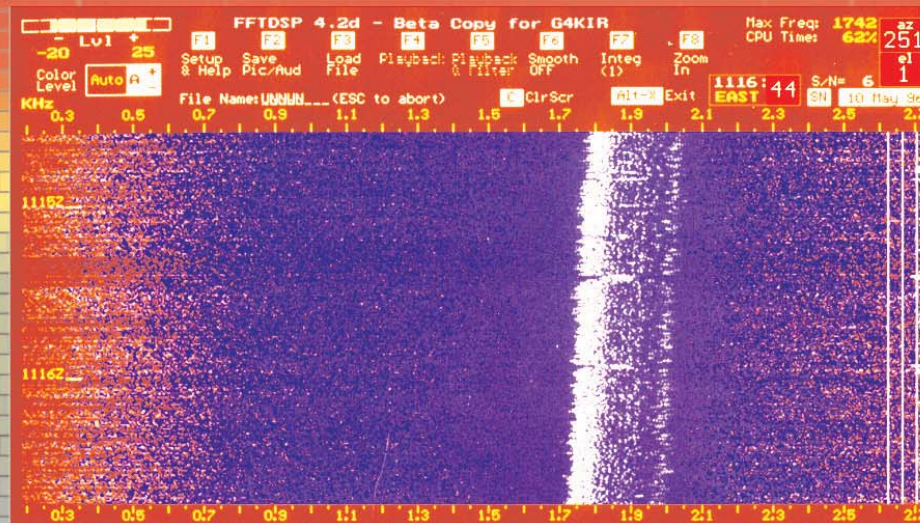


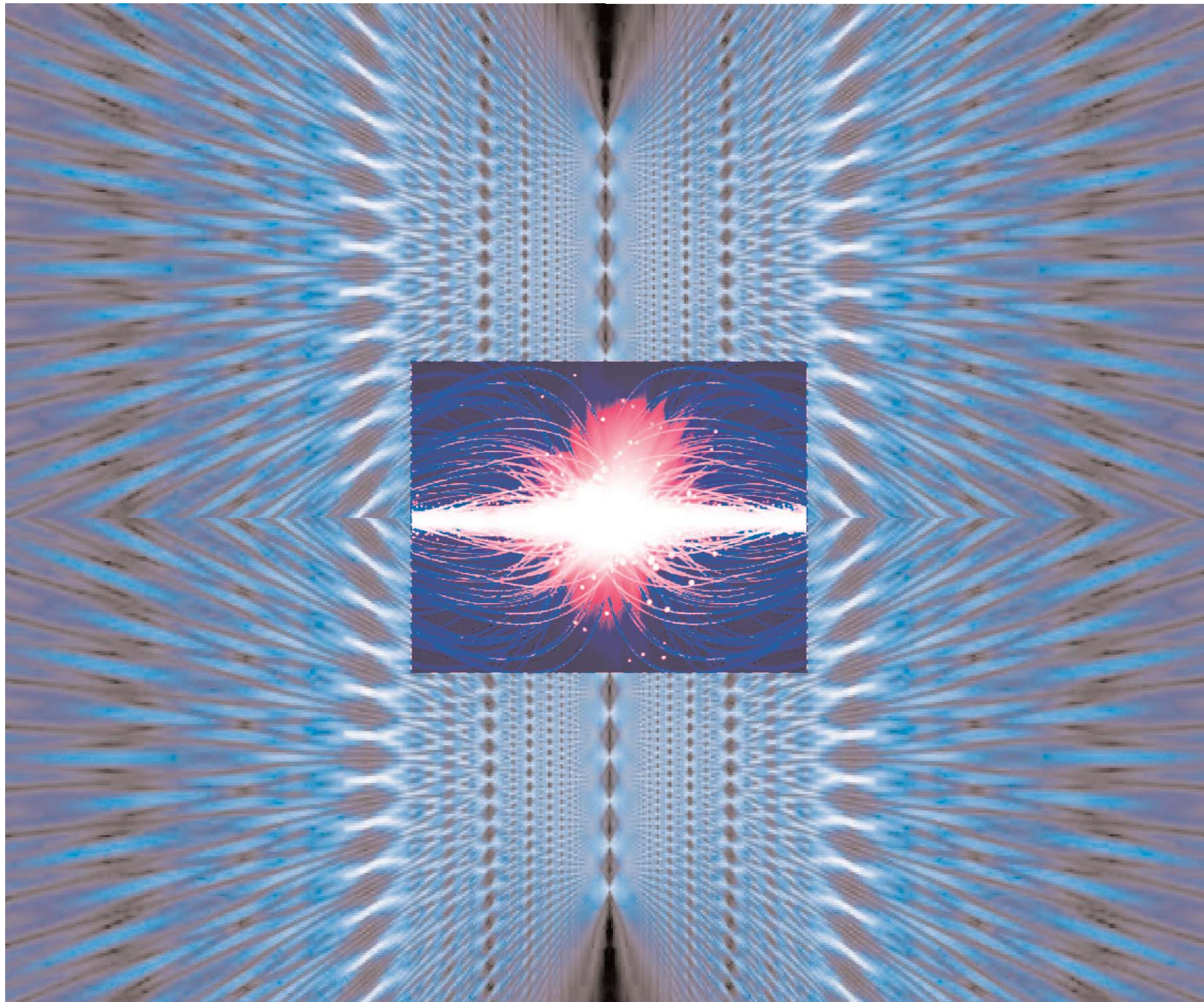


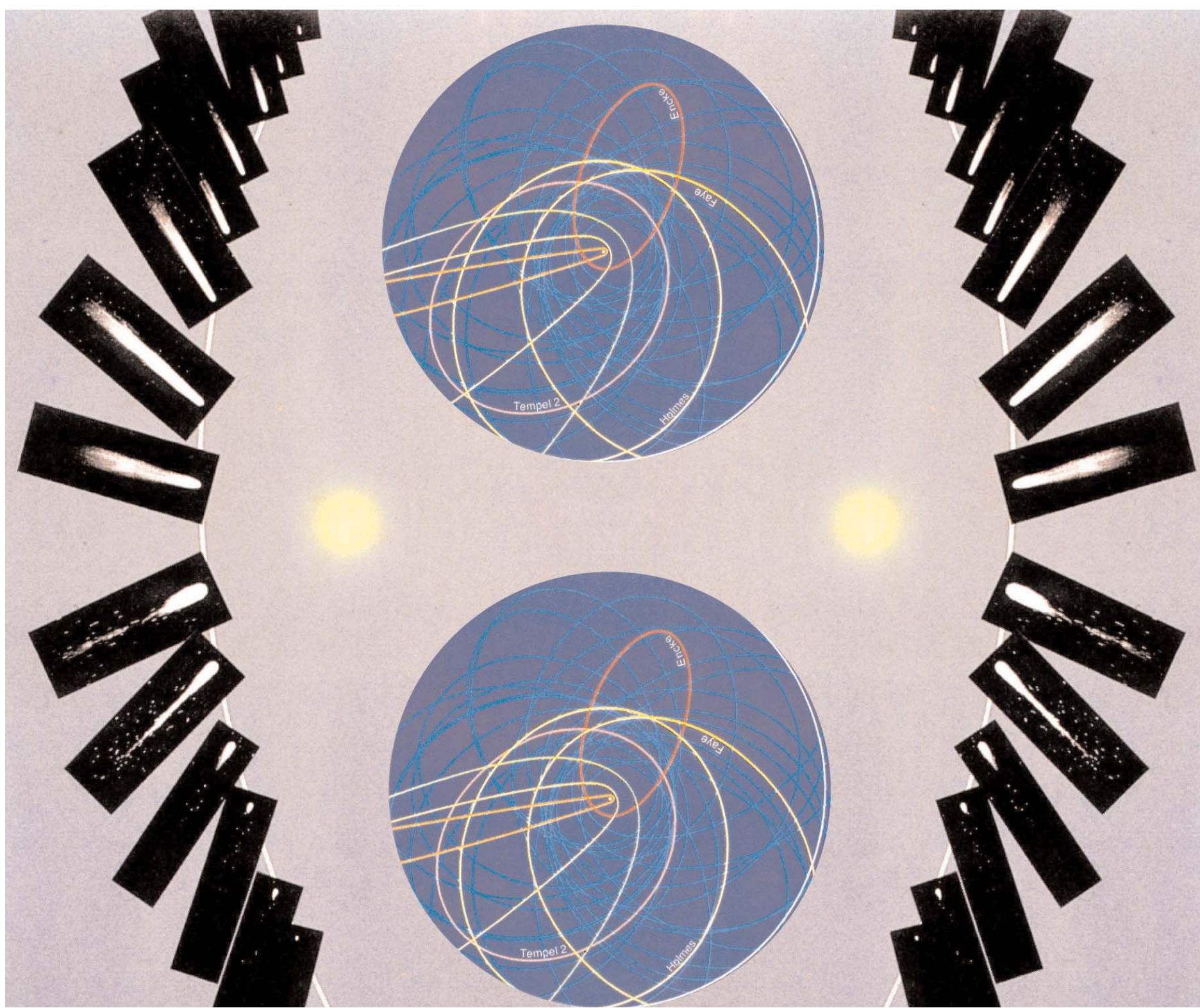
$$i\hbar \frac{\partial \psi}{\partial t} = \frac{\hbar c}{i} \left(\sum_i \alpha_i \frac{\partial \psi}{\partial x_i} \right) + \alpha_4 mc^2 \psi$$



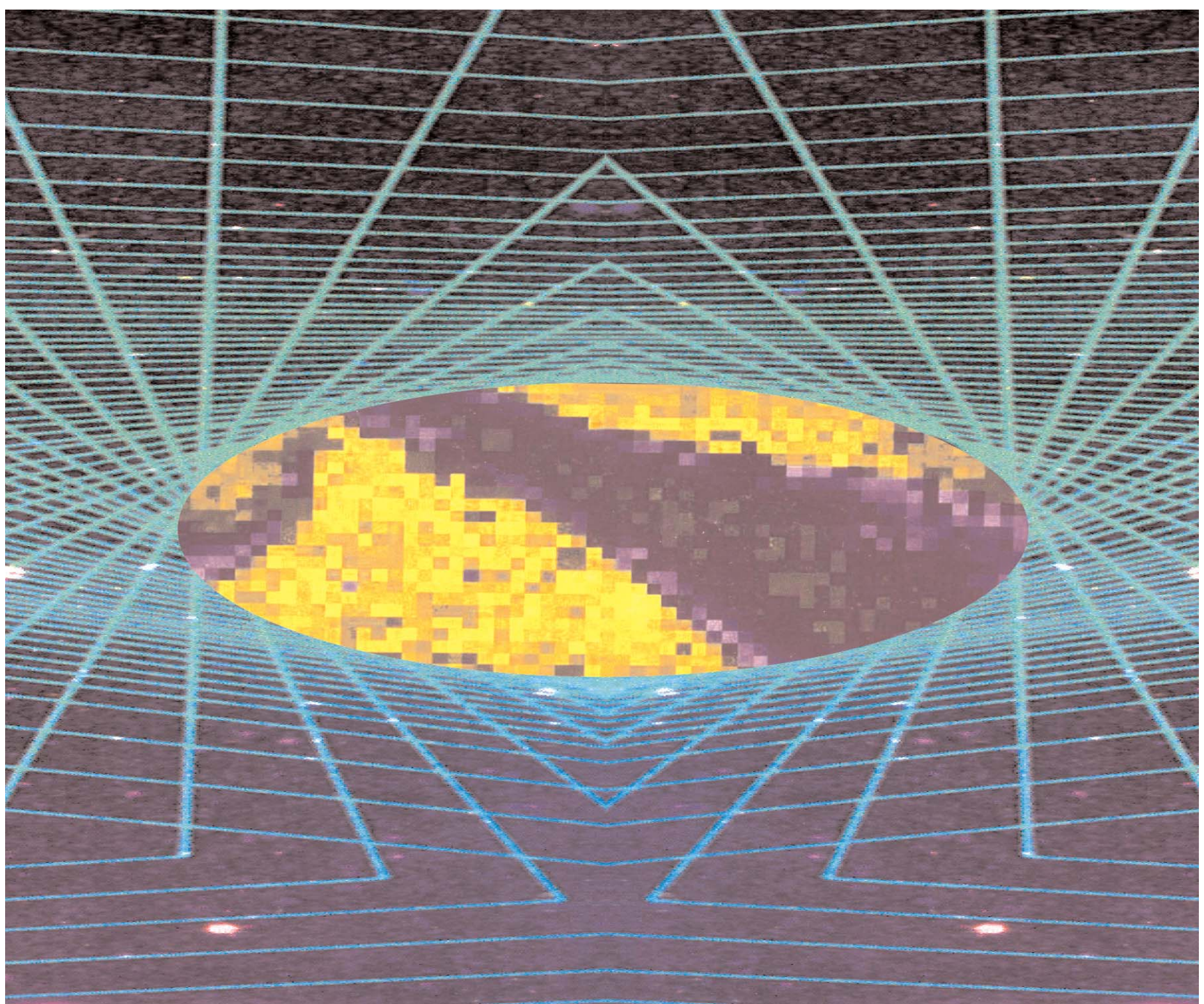


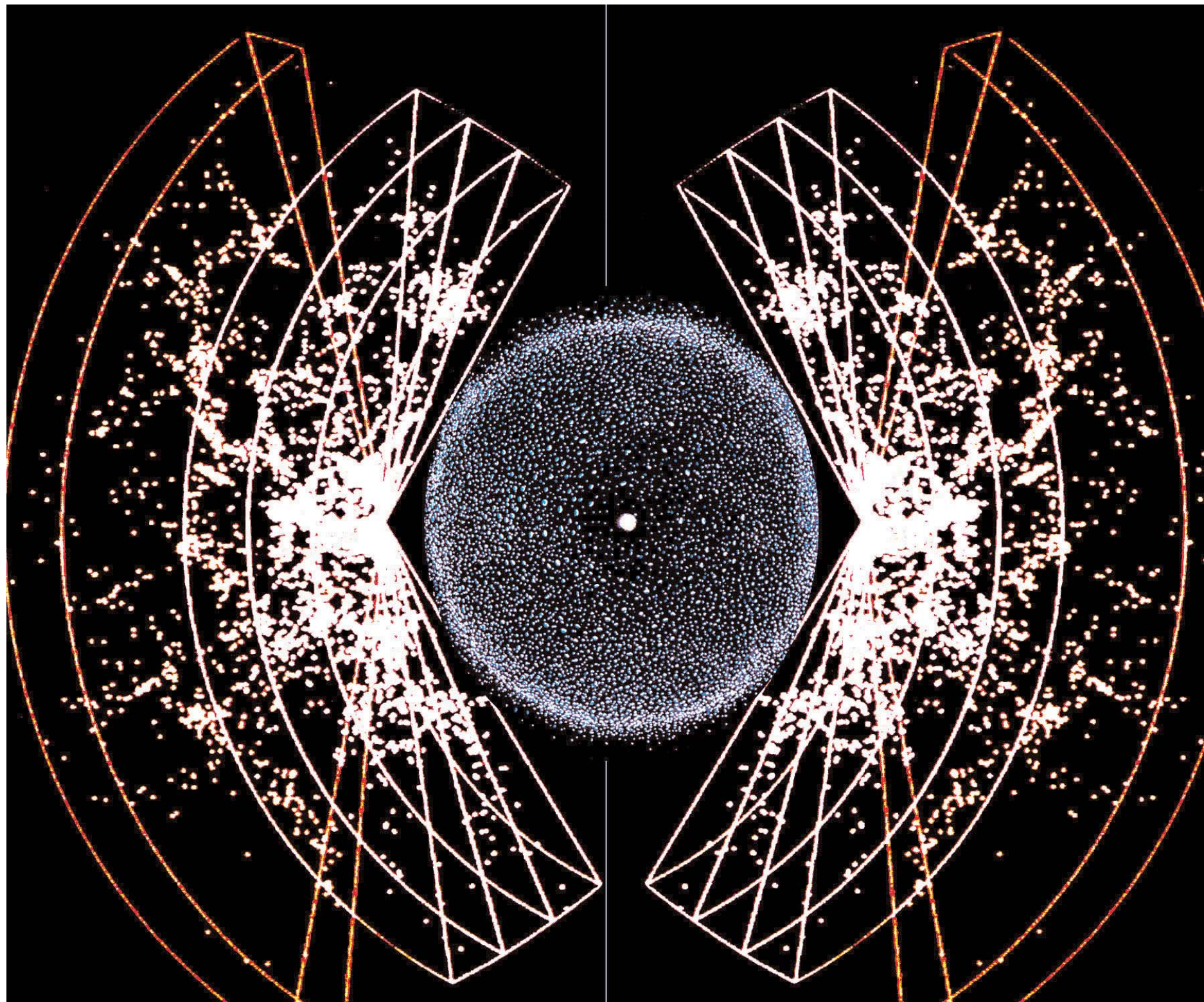


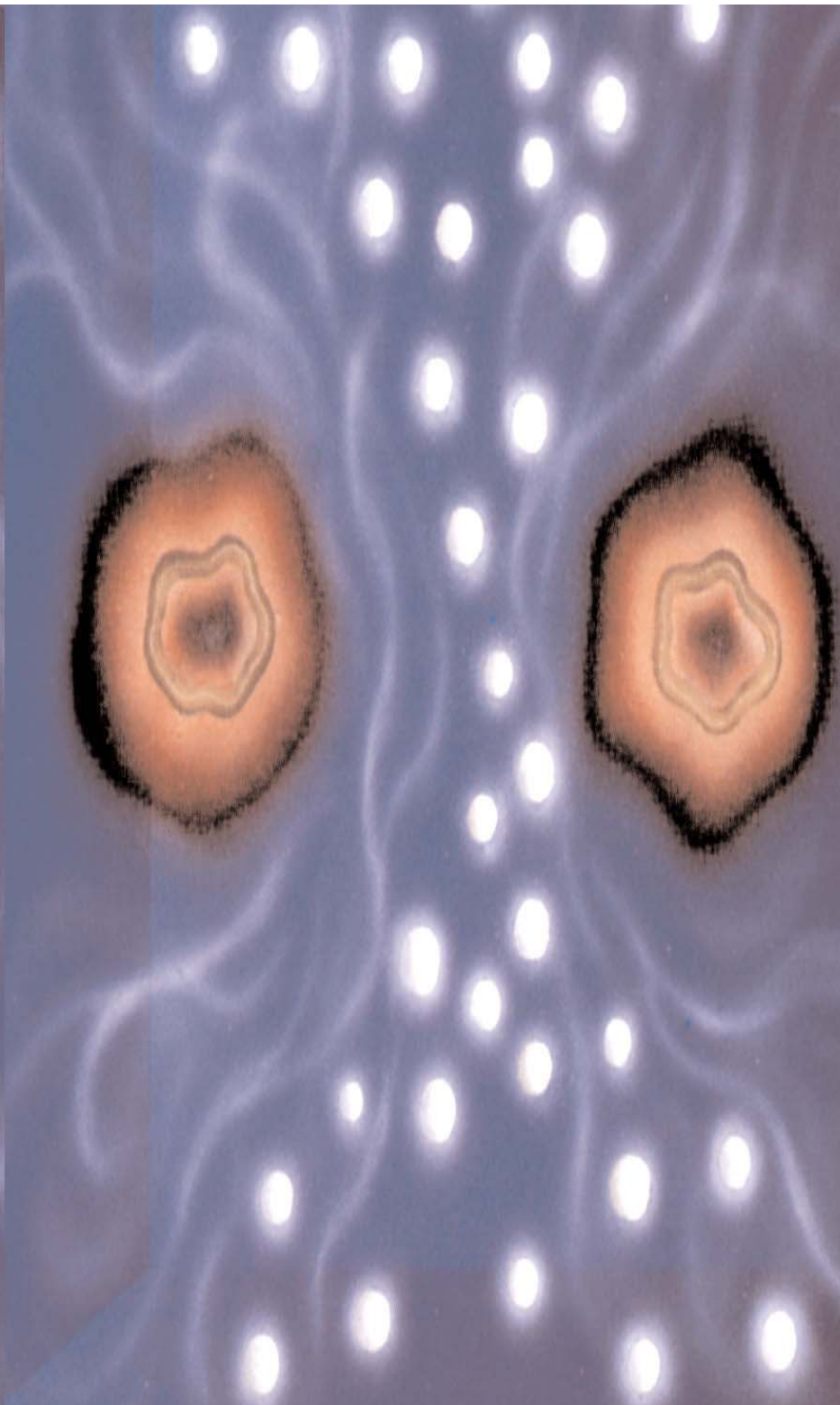
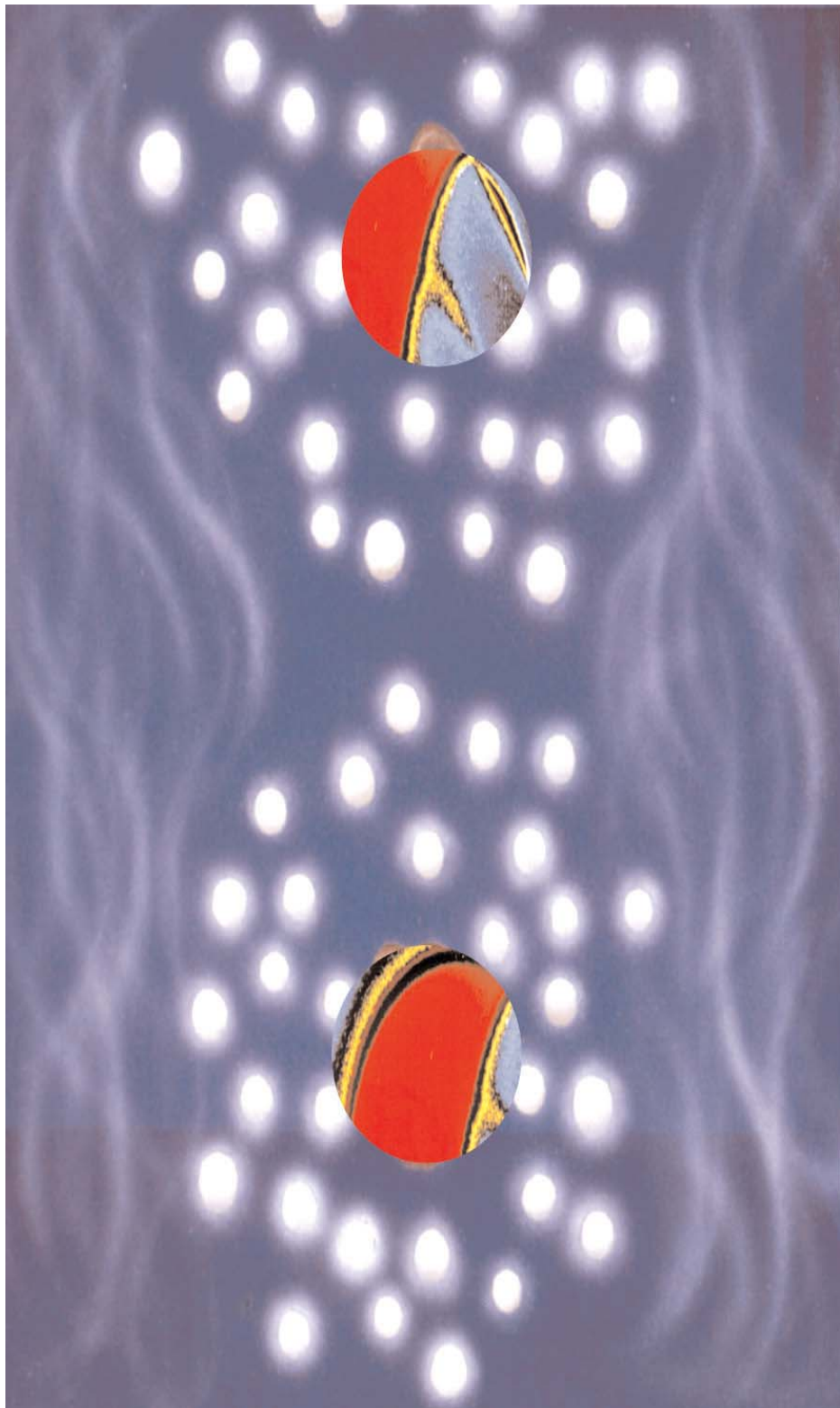


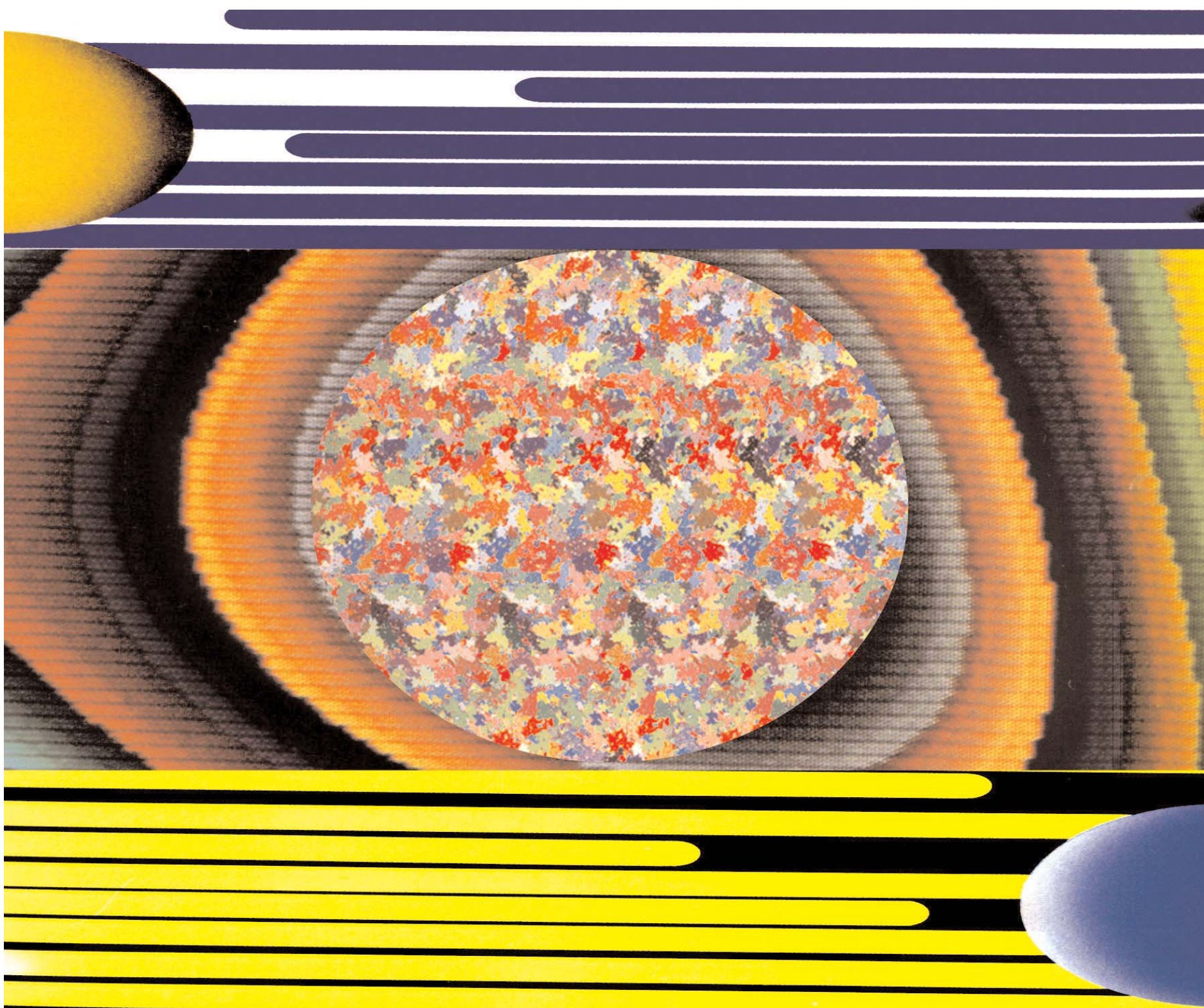




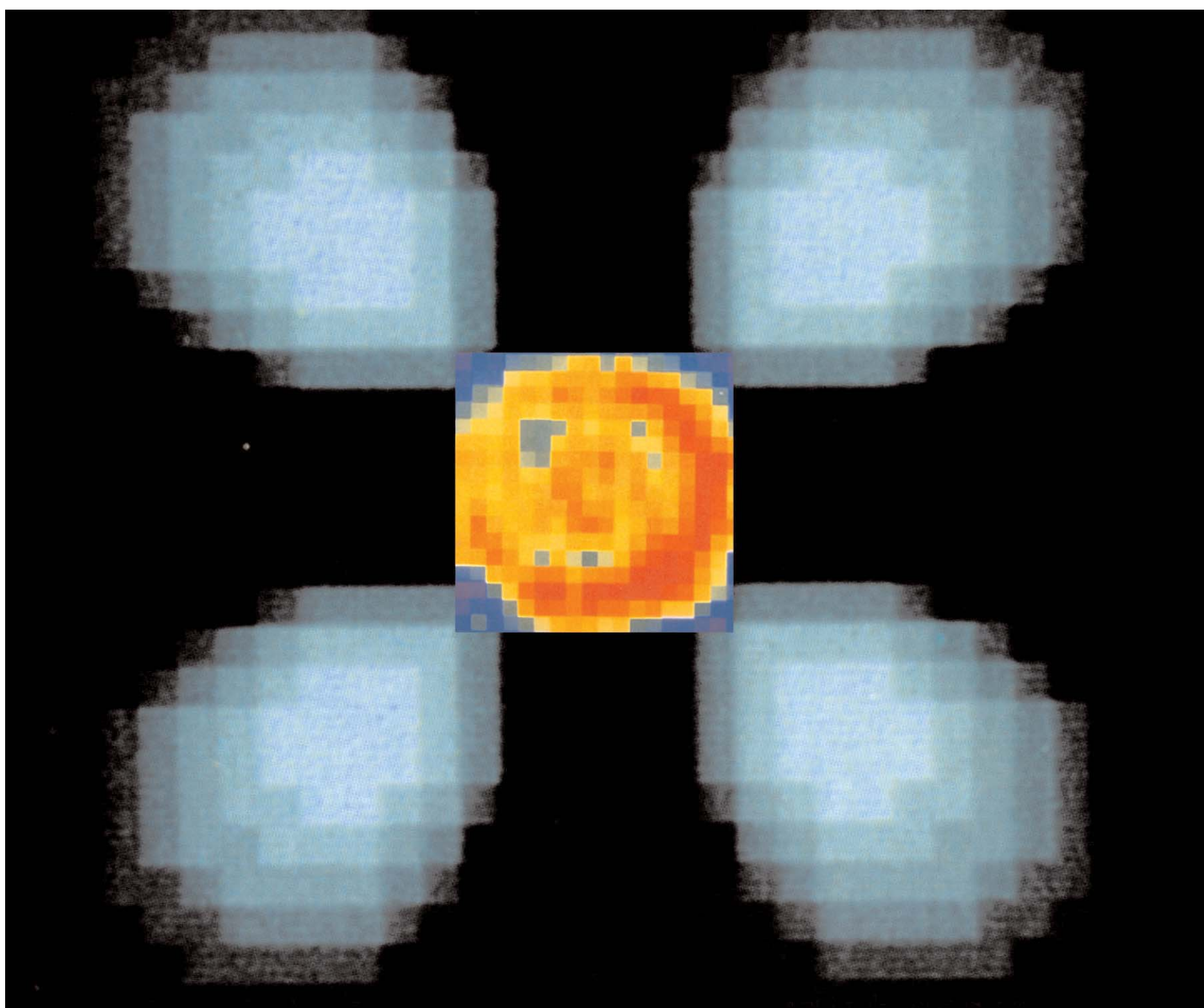


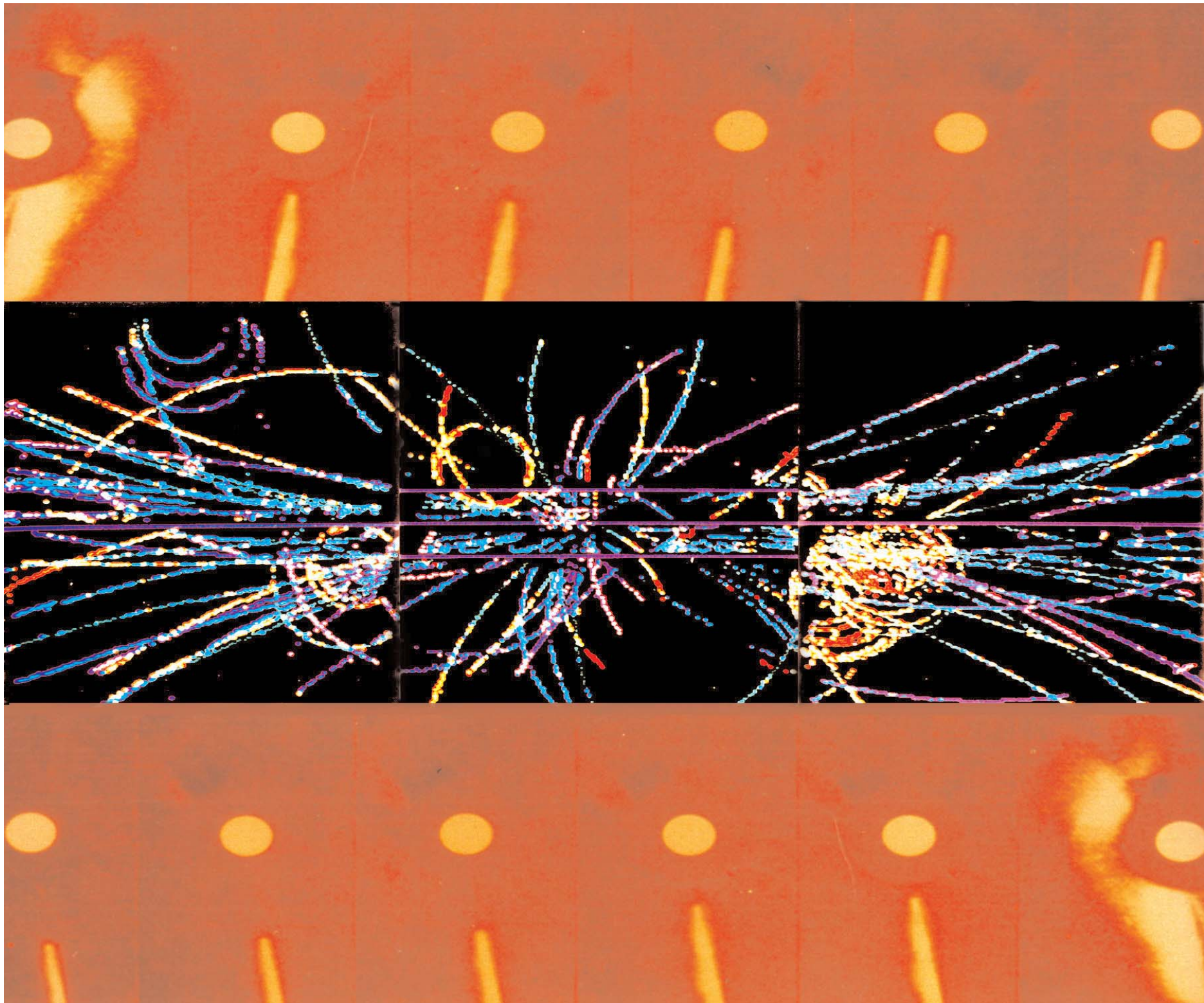


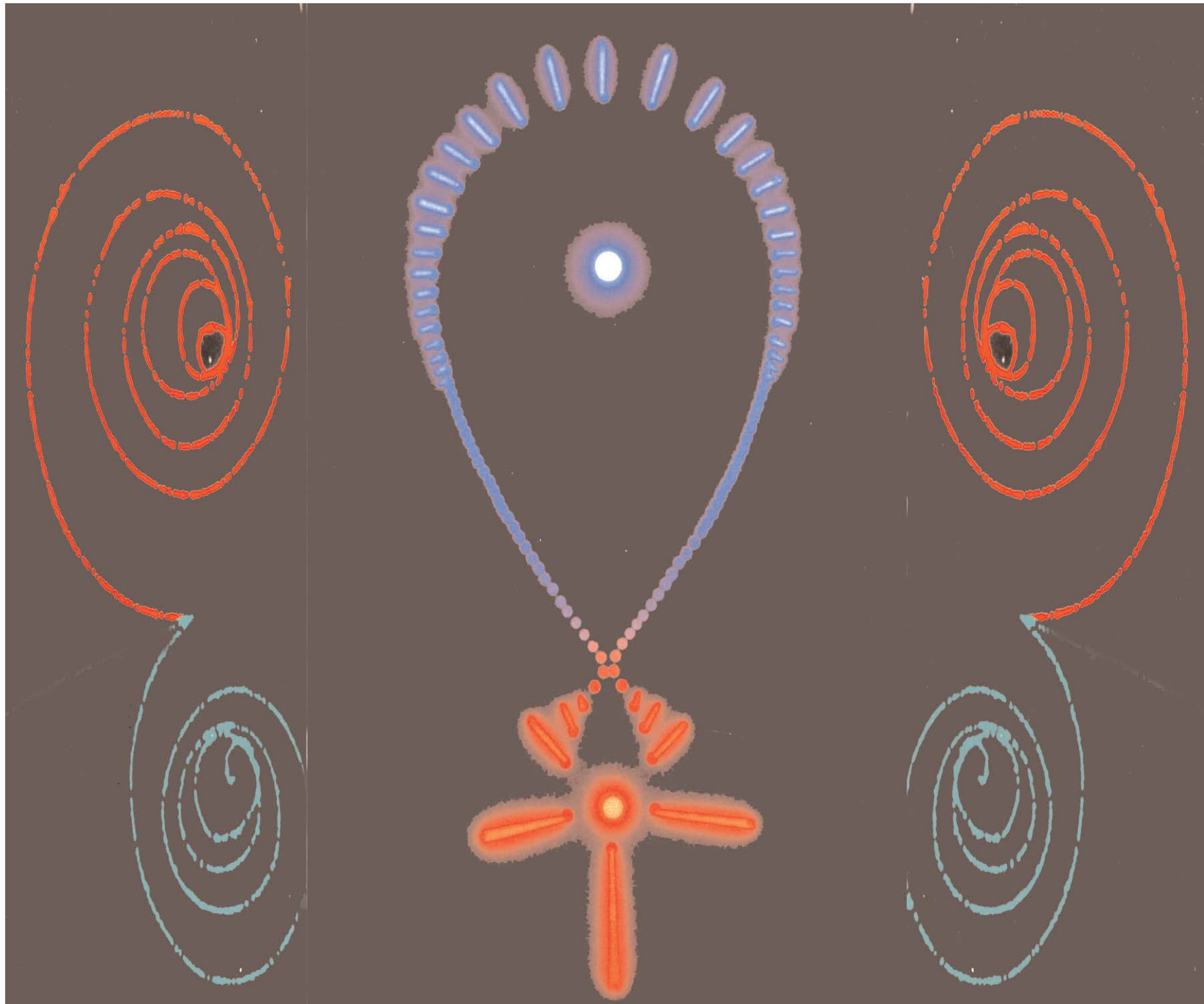


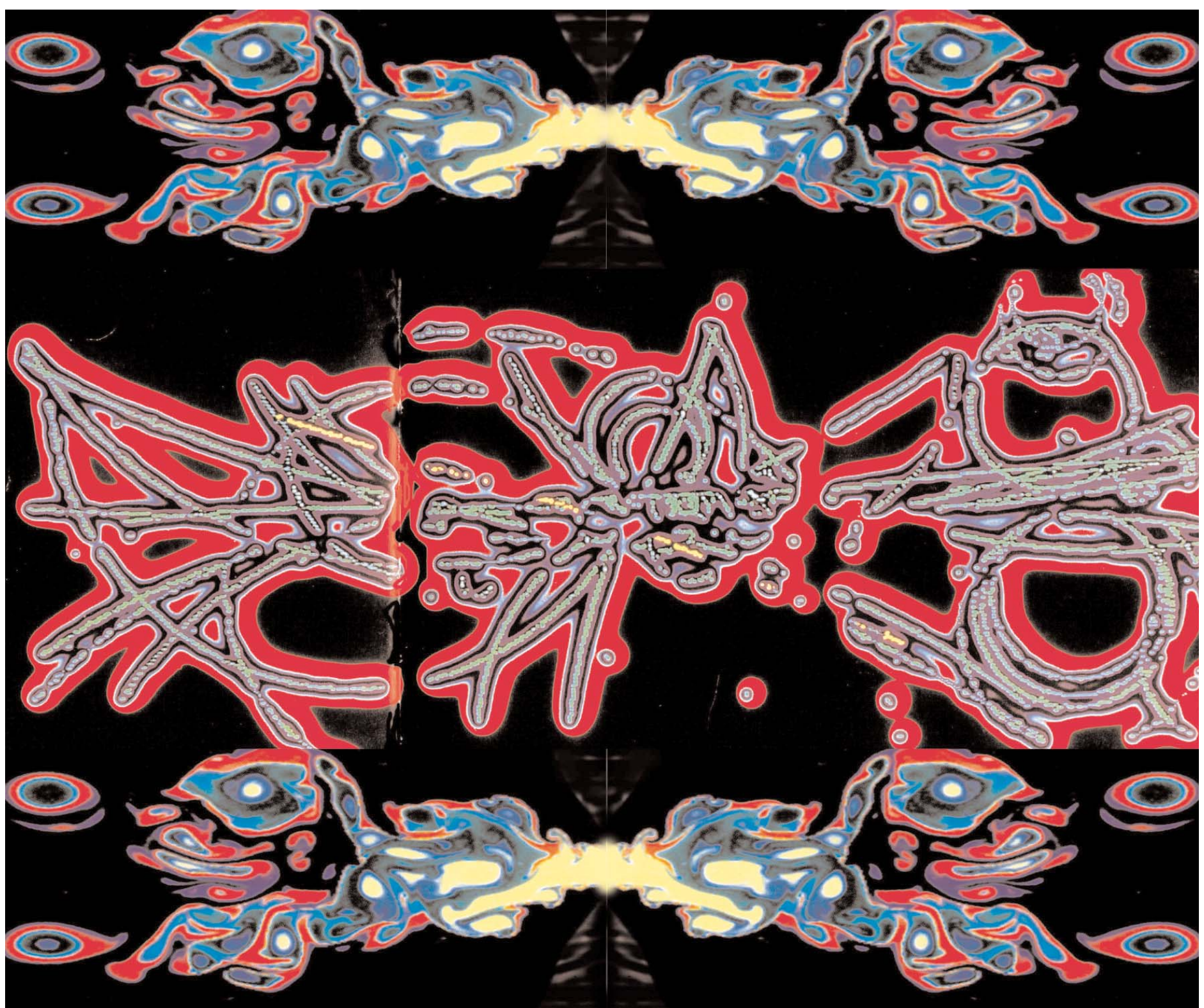


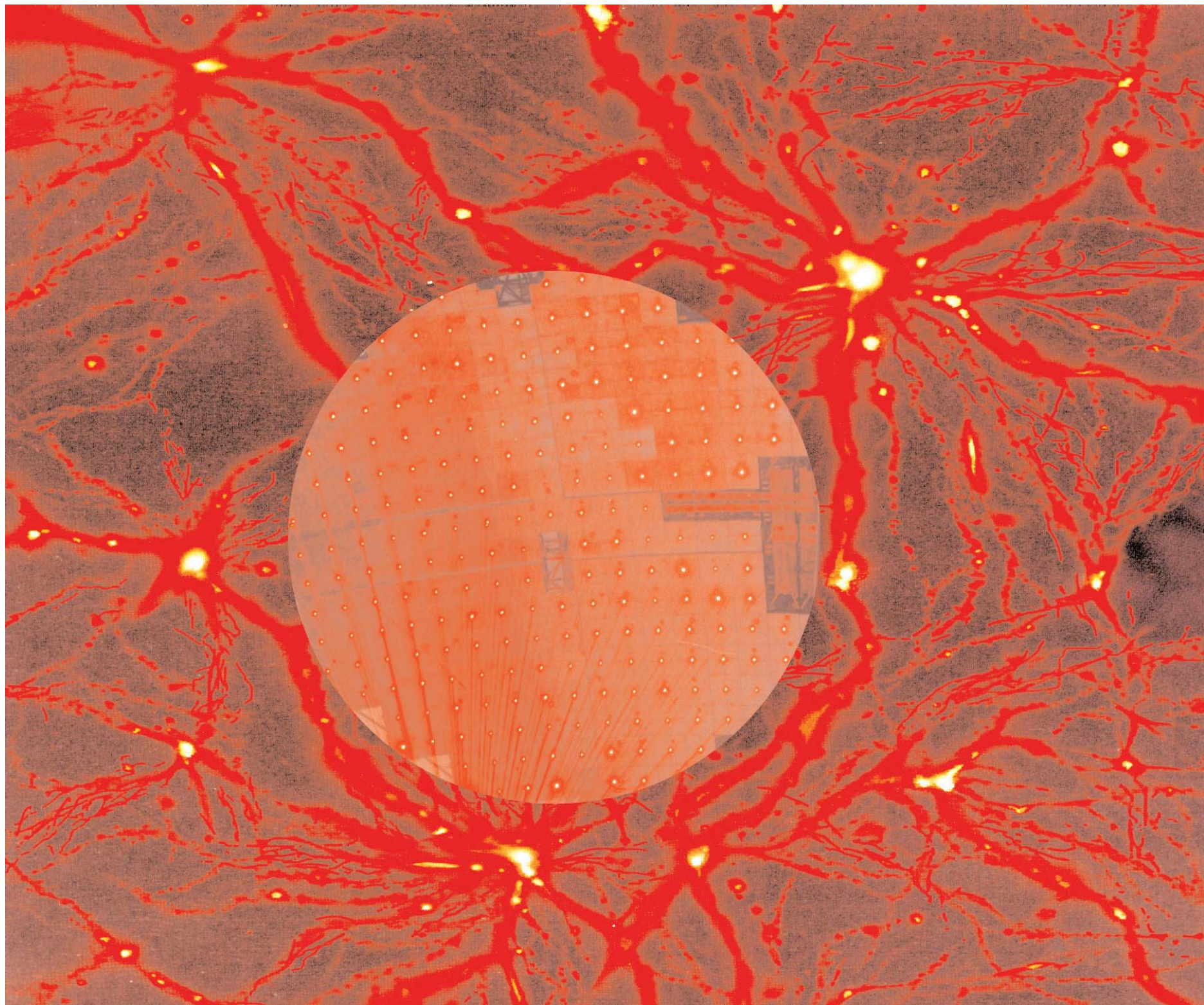












$$T_{ds} \sim \frac{1}{R} \sim \frac{1}{\Lambda} \Rightarrow \text{Non SUSY}$$

$$S_{ds} \sim (MR)^2 \sim \frac{1}{\Lambda} \Rightarrow \text{Quantum system w/ FWITE \# of STATES}$$

Particles & BHs

$$ds^2 = f(r) dt^2 + \frac{dr^2}{f(r)} + r^2 d\Omega^2$$

① Zoom into the vic.



Derive BKL Take: $N < N_*$

δ -expansion

C.D. Universeness

Consistency of Overlapping Observers



The End of Q. Univ.

Holography



Global coord. $\rightarrow$ compact

$$\rightarrow \text{Total } Q = 0$$

Static Patch $\rightarrow$ Cosmological horizon

$\rightarrow$ Screen Image

P: Only approximate charge

$\rightarrow$ Total charge $Q = 0$

excitations of (ds) spac

Nonlocal Mechanism $\rightarrow$ Adjusting itself



$$S^2 \text{ Four } \{X^i | X^j\} = \alpha \epsilon^{ijk} X^k$$

$$\{X^i\}^2 = R^2 = (n)^2$$

$$X^i = \beta L^i, [L^i, L^j] = i \epsilon^{ijk} L^k$$

$$\{L^i\}^2 = l(l+1)$$

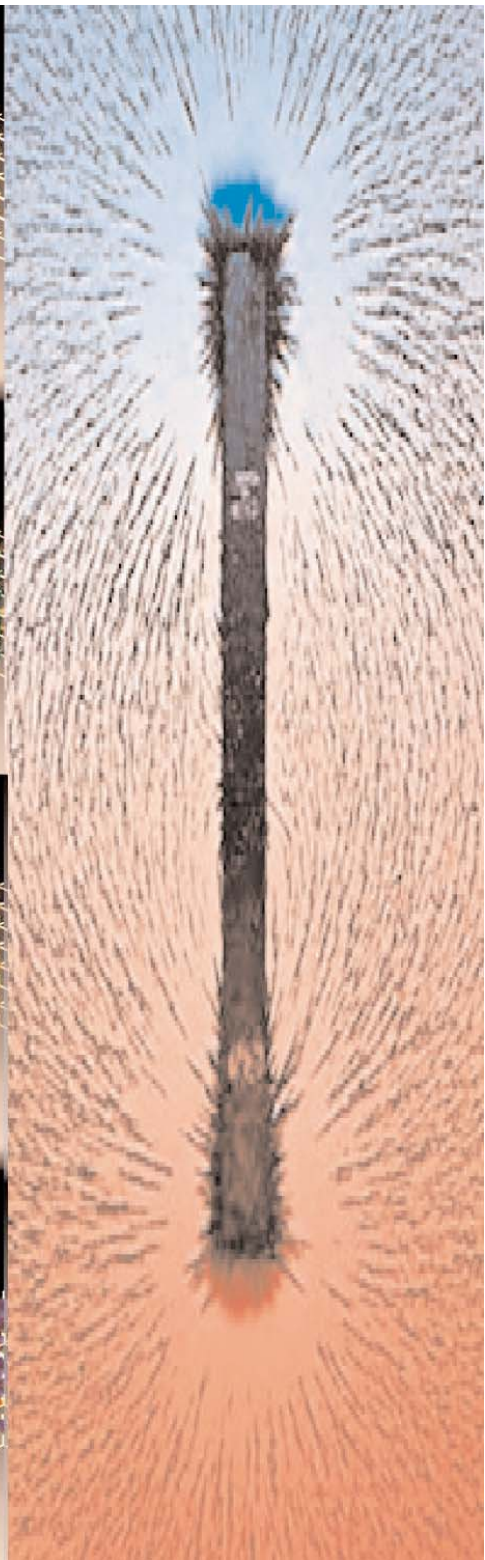
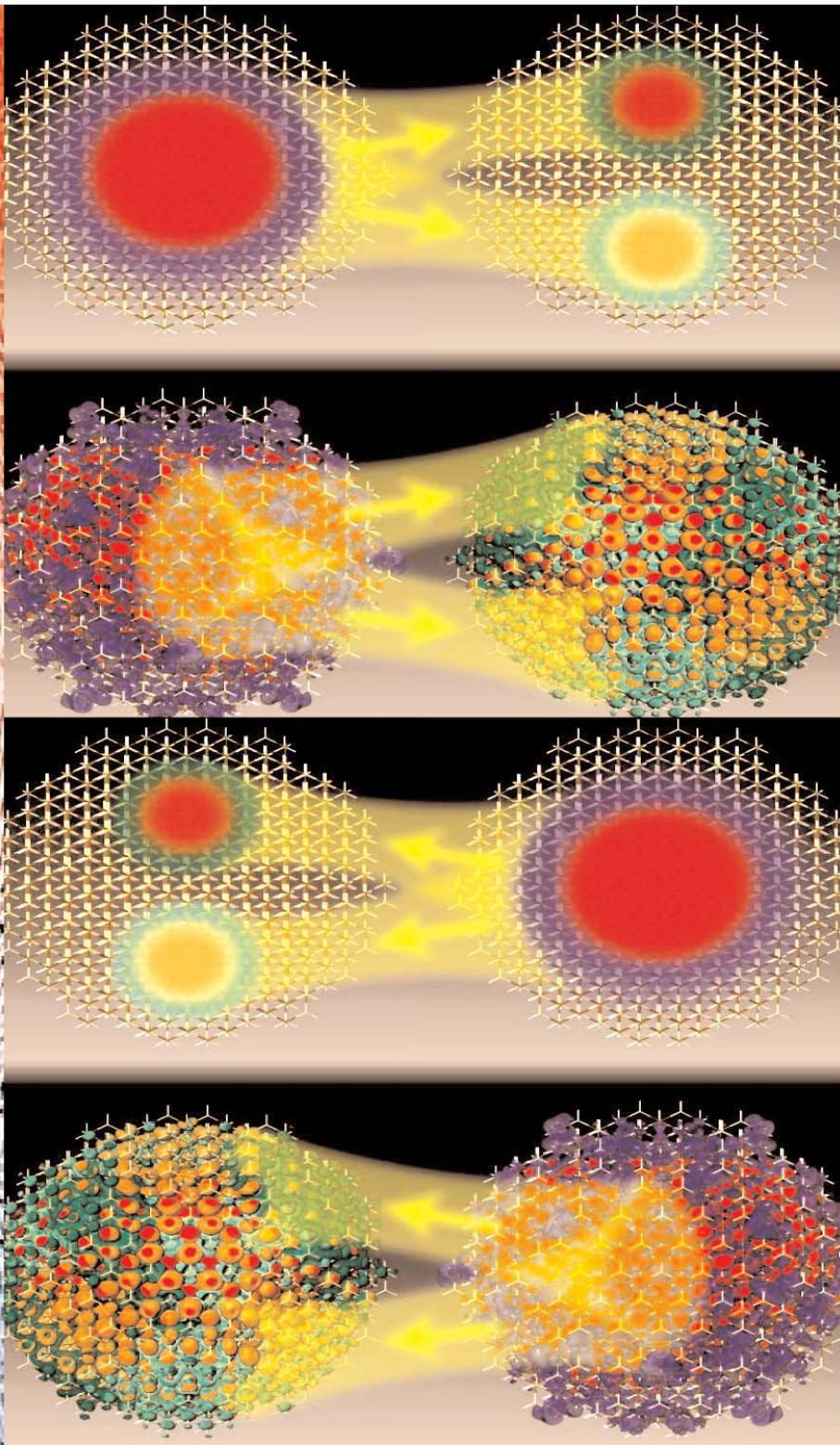
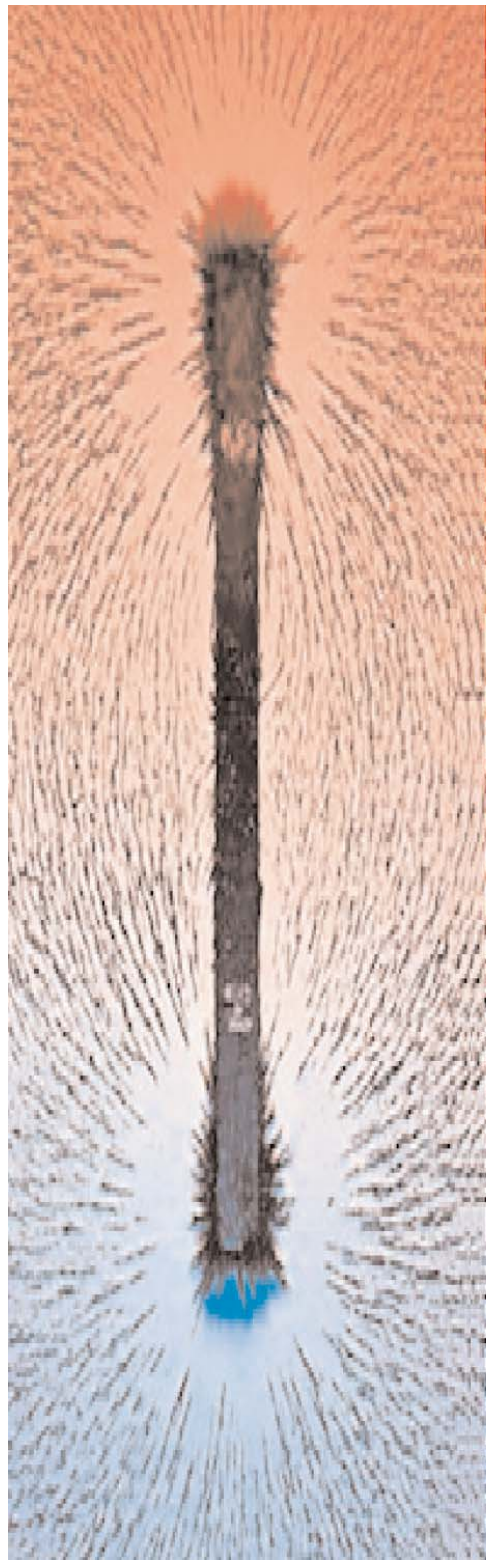
$$\{X^i\}^2 = \gamma^2 - 1 = n \rightarrow \gamma^2 = n+1 \rightarrow \gamma = \sqrt{n+1}$$

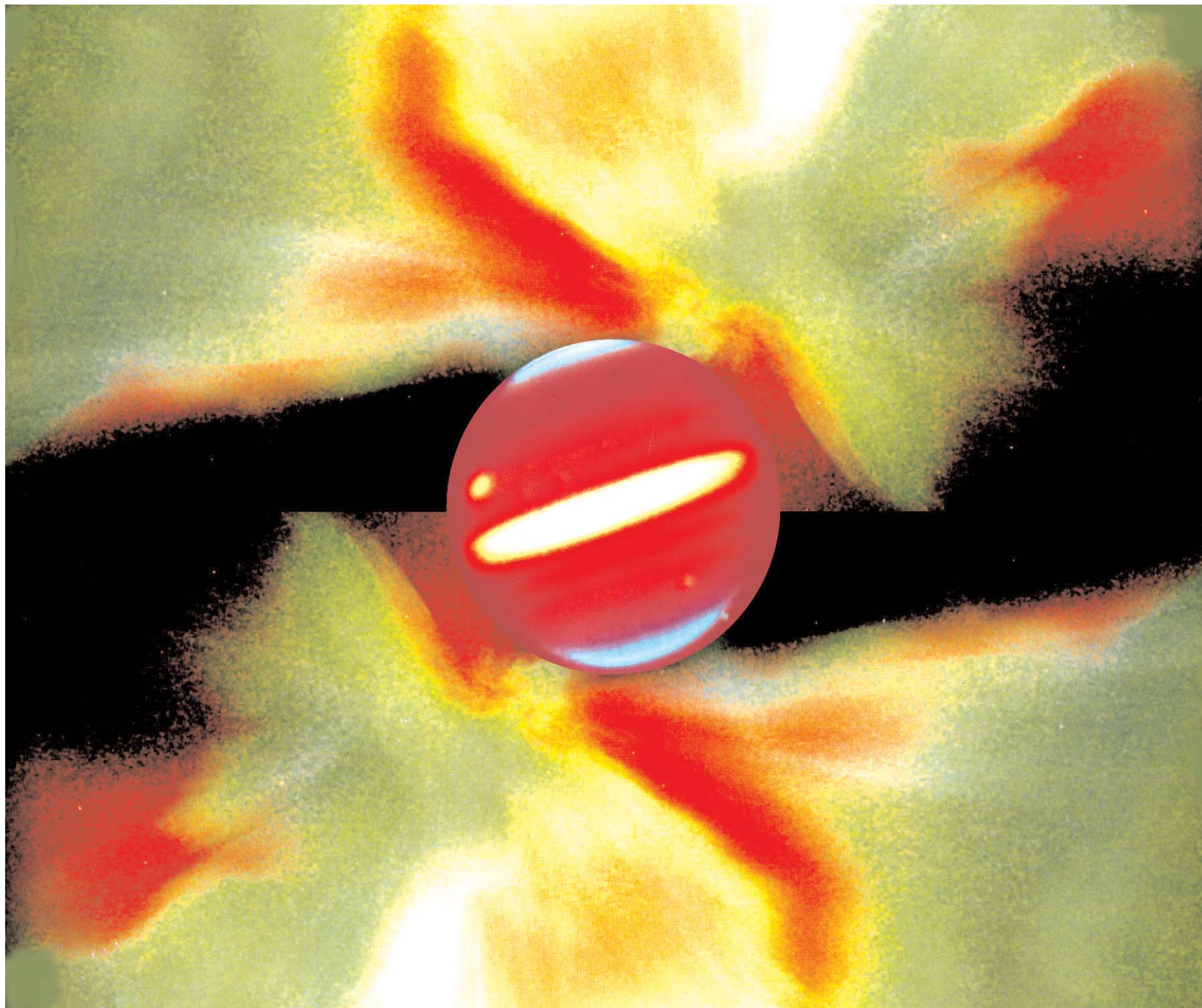


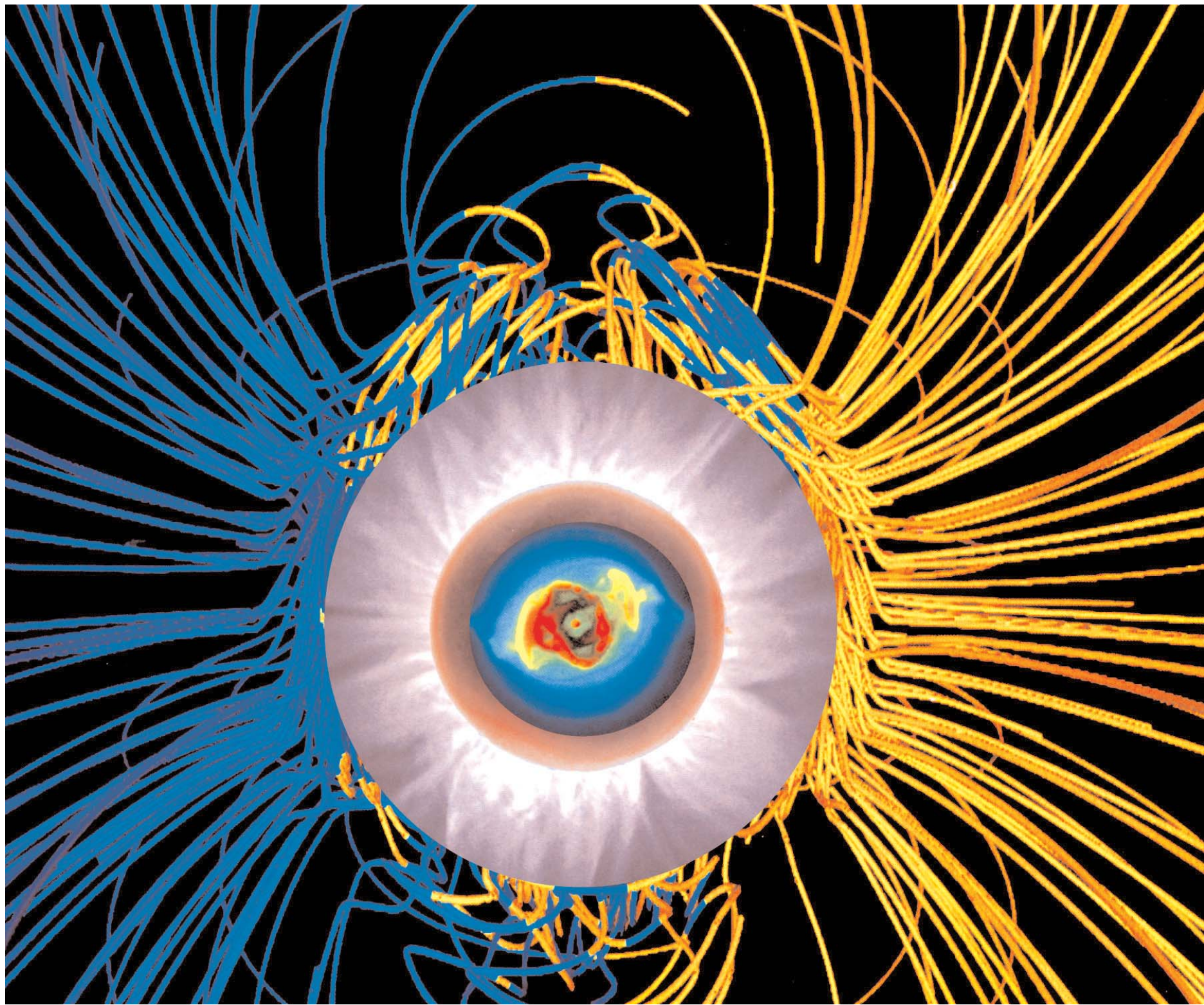
$\langle 3 \rangle$
 $\langle 0 \rangle$
 $\langle 8 \rangle$

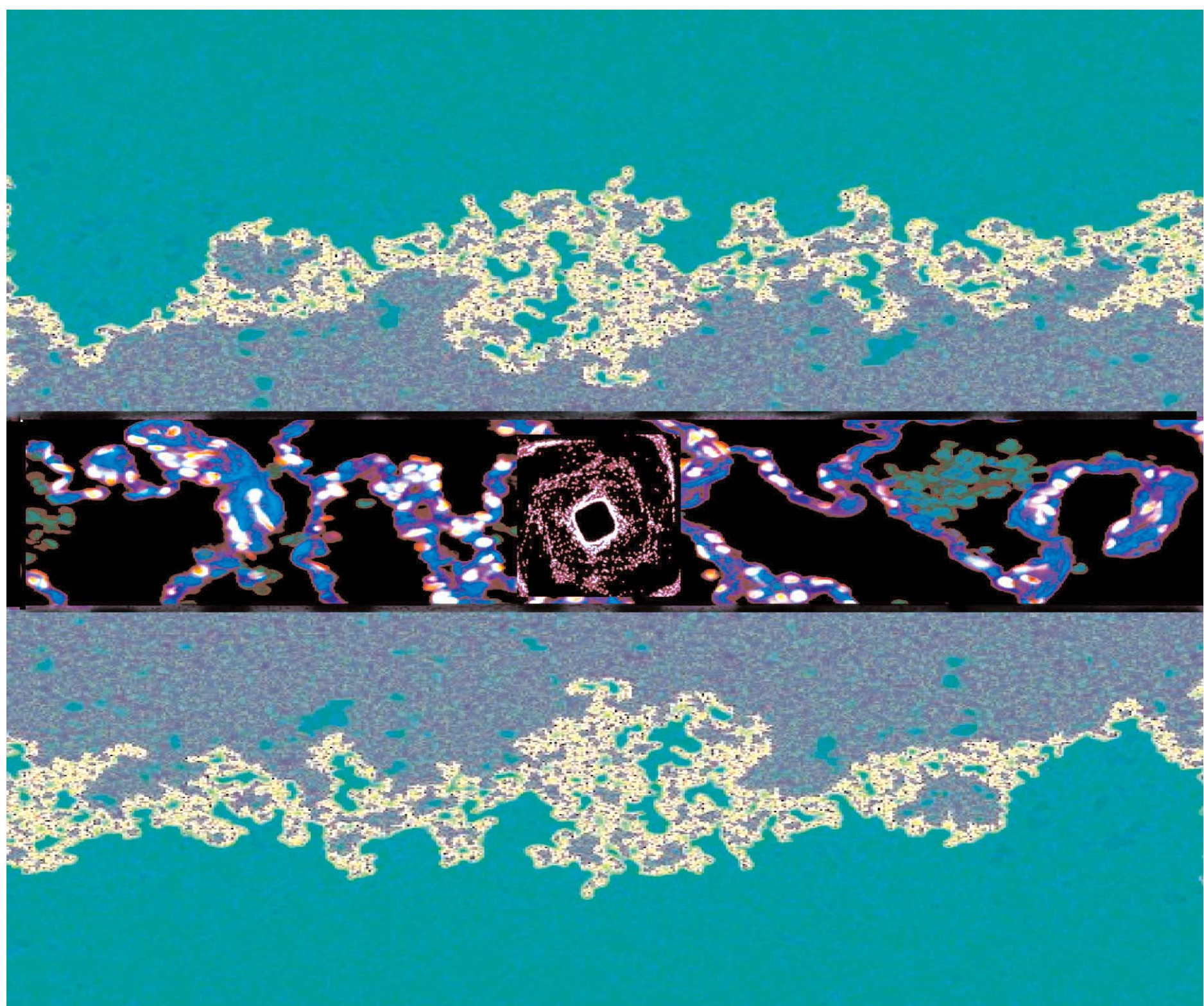
$$\Delta \theta = \frac{1}{2}$$

$$M_2 = H_0 \rho$$



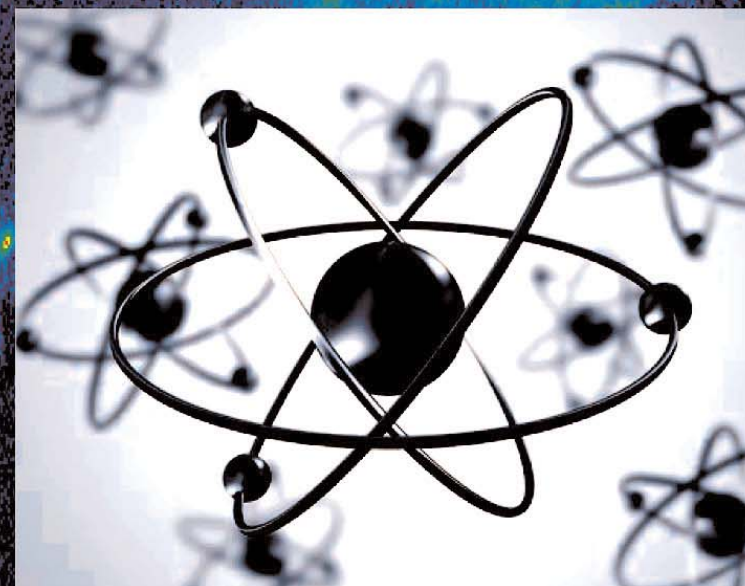


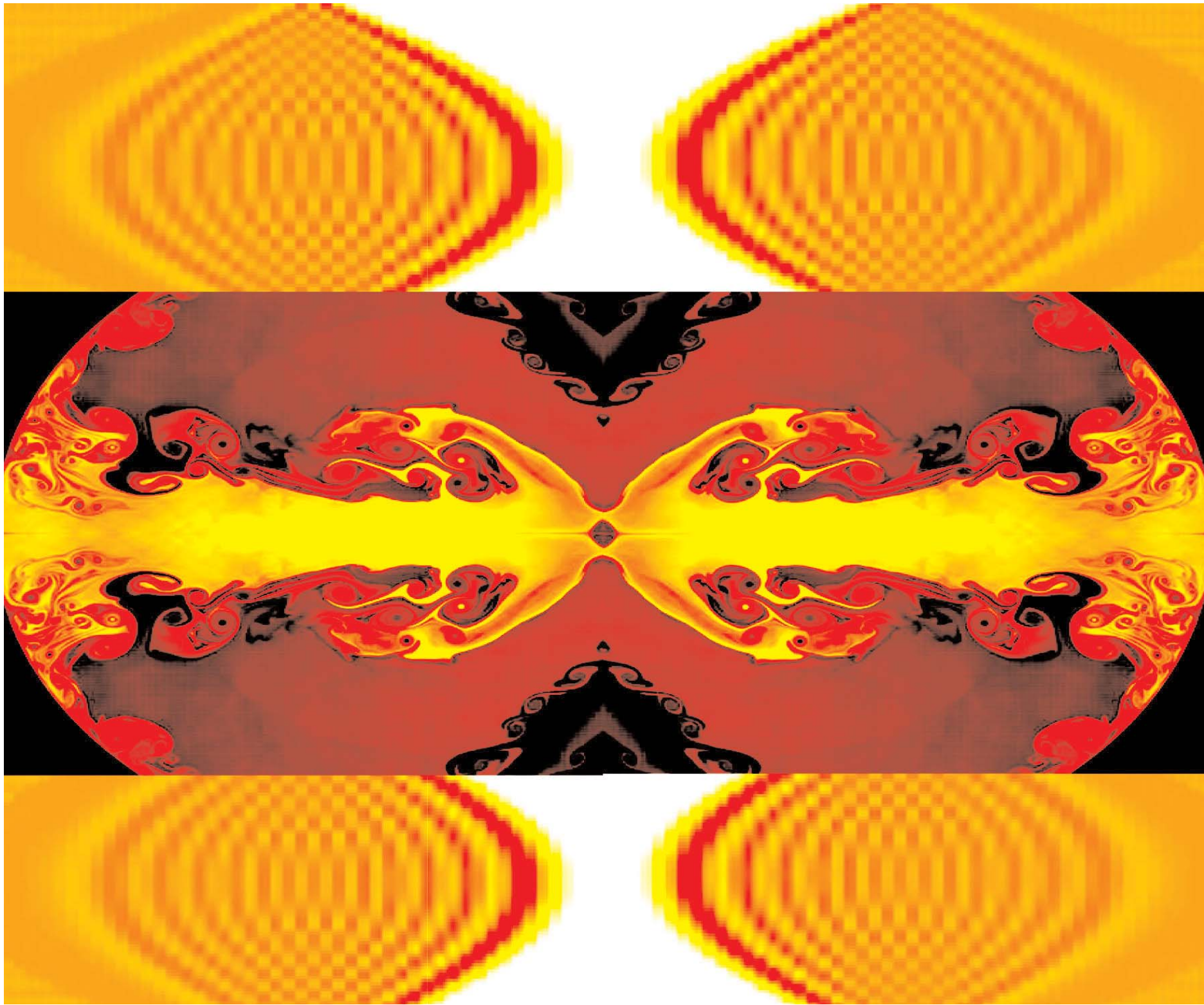


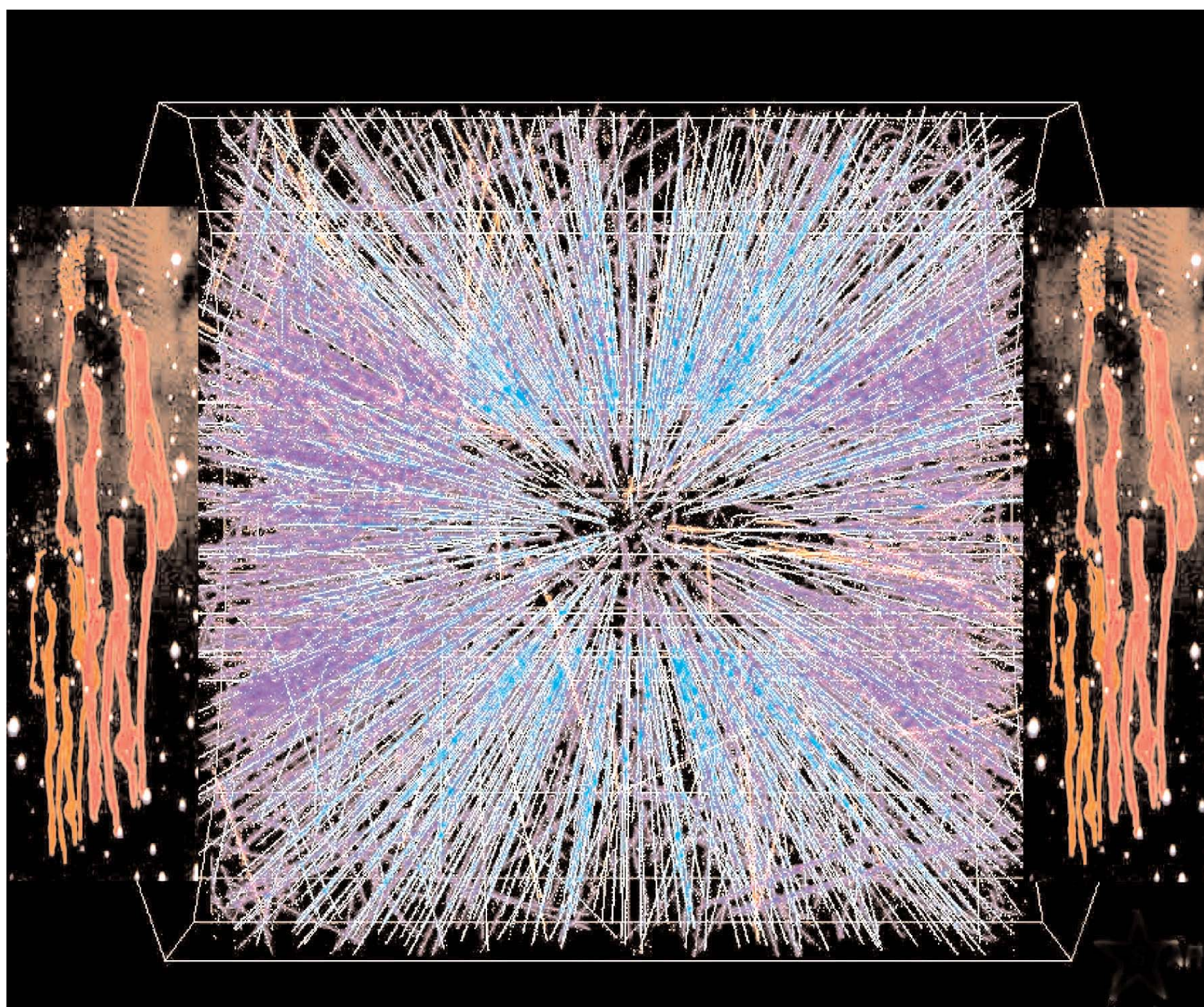


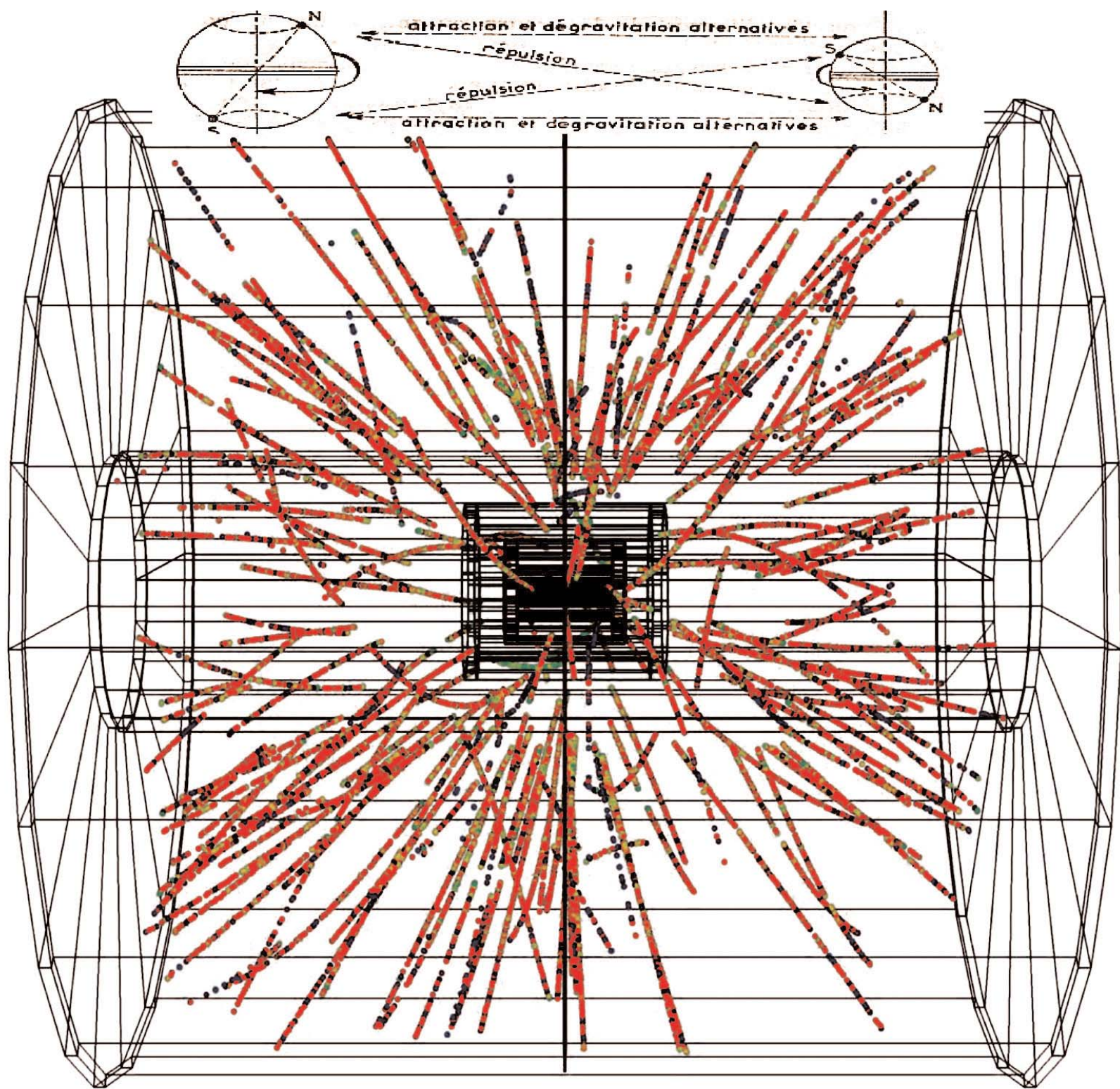


$$\begin{aligned}
 \frac{d}{dt}\langle x \rangle &= \frac{d}{dt} \int_{-\infty}^{+\infty} \bar{\Psi} x \Psi dx = \int_{-\infty}^{+\infty} \frac{d}{dt} (\bar{\Psi} x \Psi) dx = \int_{-\infty}^{+\infty} \left(\frac{\partial \bar{\Psi}}{\partial t} x \Psi + \bar{\Psi} x \frac{\partial \Psi}{\partial t} \right) dx \\
 &= \int_{-\infty}^{+\infty} \frac{\partial \bar{\Psi}}{\partial t} x \Psi dx + \int_{-\infty}^{+\infty} \bar{\Psi} x \frac{\partial \Psi}{\partial t} dx = \int_{-\infty}^{+\infty} \left(\frac{\partial \bar{\Psi}}{\partial t} \right) x \Psi dx + \int_{-\infty}^{+\infty} \bar{\Psi} x \left(\frac{\partial \Psi}{\partial t} \right) dx \\
 &= \frac{i}{\hbar} \left[\int_{-\infty}^{+\infty} \left(-\frac{\hbar^2}{2m} \frac{\partial^2 \bar{\Psi}}{\partial x^2} + E_{pot}(x) \bar{\Psi} \right) x \Psi dx - \int_{-\infty}^{+\infty} \bar{\Psi} x \left(-\frac{\hbar^2}{2m} \frac{\partial^2 \Psi}{\partial x^2} + E_{pot}(x) \Psi \right) dx \right] \\
 &= \frac{i\hbar}{2m} \left[\int_{-\infty}^{+\infty} \left(-\frac{\partial^2 \bar{\Psi}}{\partial x^2} \right) x \Psi dx - \int_{-\infty}^{+\infty} \bar{\Psi} x \left(-\frac{\partial^2 \Psi}{\partial x^2} \right) dx \right] = \frac{i\hbar}{2m} \int_{-\infty}^{+\infty} \left(\bar{\Psi} x \frac{\partial^2 \Psi}{\partial x^2} - \frac{\partial^2 \bar{\Psi}}{\partial x^2} x \Psi \right) dx
 \end{aligned}$$

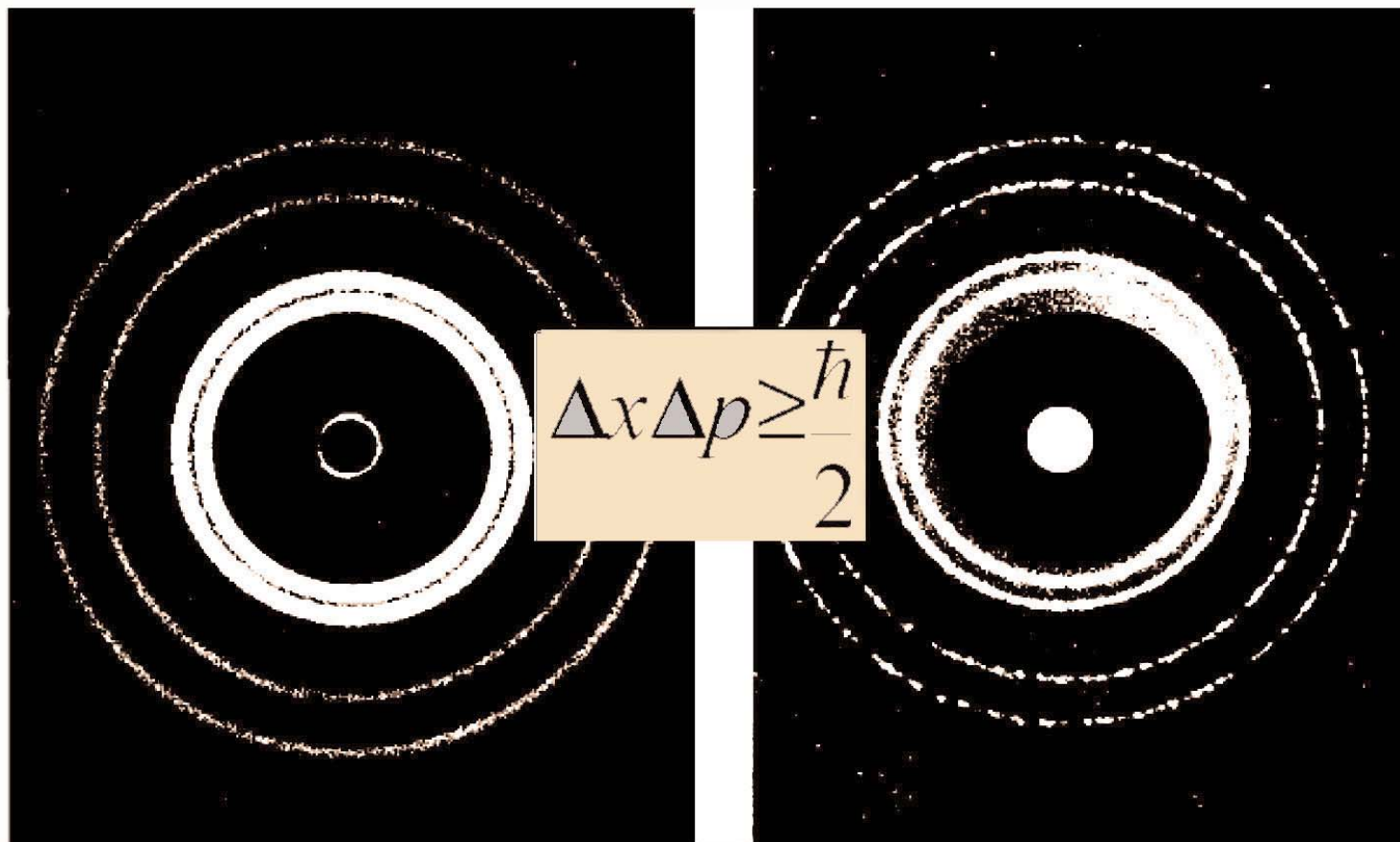








$$\left(-\frac{\hbar^2}{2m_o} \nabla^2 + V(\mathbf{r}) \right) \psi = E\psi$$



$$\left(-\frac{\hbar^2}{2m_o} \nabla^2 + V(\mathbf{r}) \right) \psi = E\psi$$

